CURTIS WATER TREATMENT PLANT IMPROVEMENTS

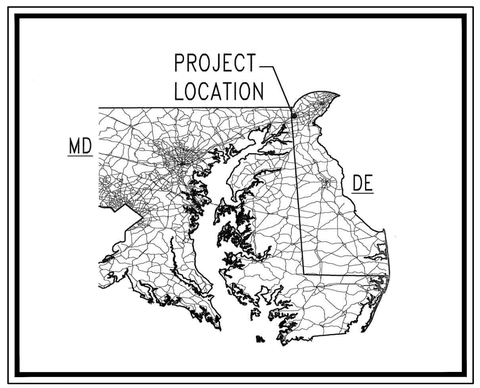
NEW CASTLE COUNTY, DELAWARE
APRIL 2017 - CONSTRUCTION PLANS

CONTRACT NO.: 17-05
PWSID: 0000630

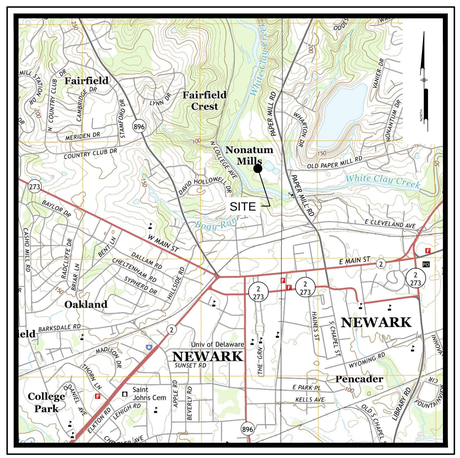
PREPARED FOR:

CITY OF NEWARK
DEPT. OF PUBLIC WORKS AND WATER RESOURCES

220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711
(302) 366-7000



LOCATION MAP
Scale: NTS



USGS MAP
Scale: 1" = 2000'

PREPARED BY:

PENNONI ASSOCIATES INC.

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SHEET INDEX

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ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

ISSUED FOR BID 11/17/2017

CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE
COVER SHEET
CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	MWF
APPROVED BY	DPB

G0001

SHEET 1 OF 54

PLOTTED: 11/2/2017 2:25 PM BY: Brian Miller PLOTSTYLE: Pennoni NCS.stb PROJECT STATUS: CONSTRUCTION PLANS
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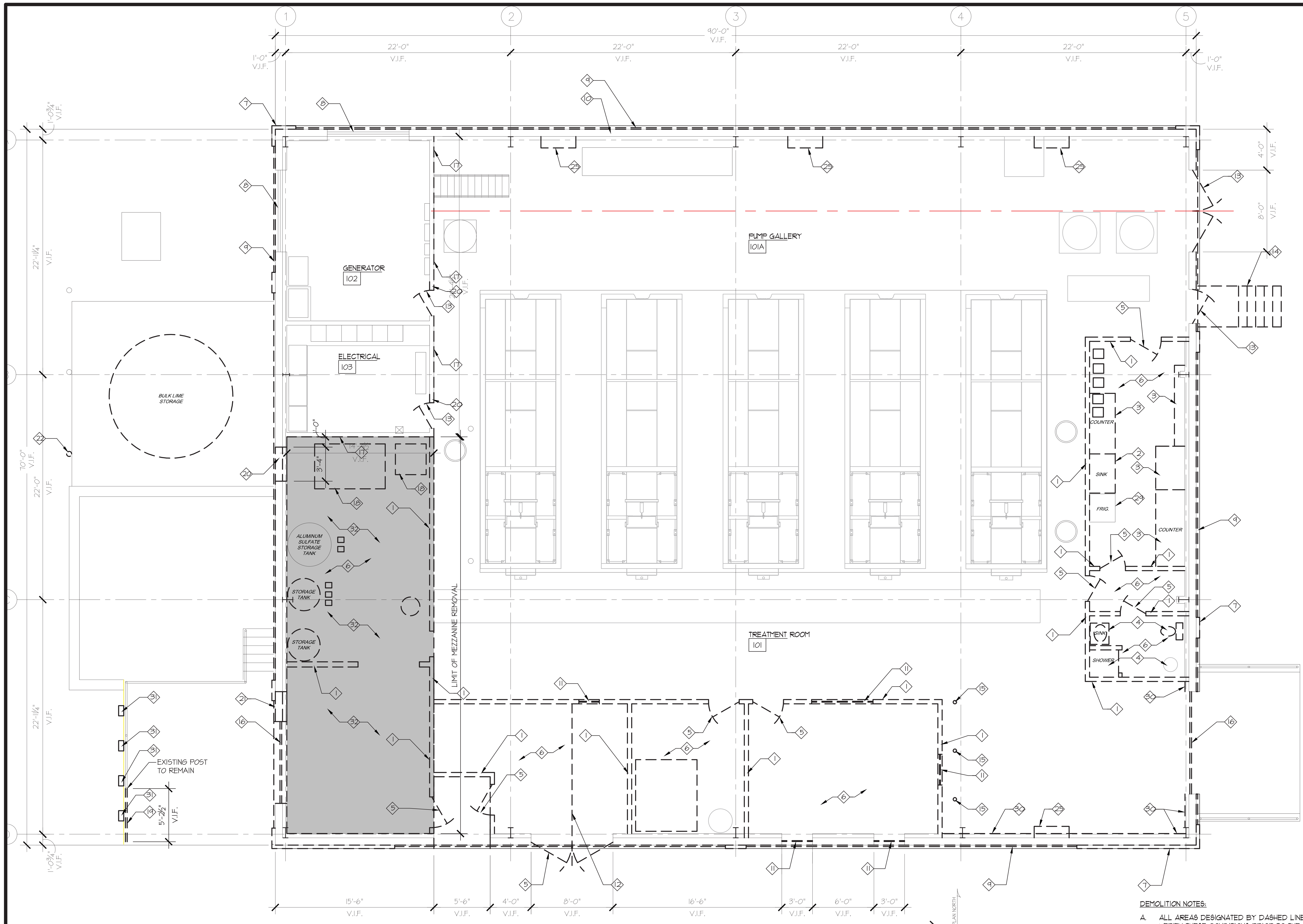

1 DEMOLITION PLAN

SCALE: 3/16" = 1'-0"

DEMOLITION KEY:

- EXISTING CONSTRUCTION TO REMAIN
- EXISTING CONSTRUCTION TO BE REMOVED

DEMOLITION KEY NOTES

1. REMOVE EXISTING PARTITIONS SHOWN DASHED AND REPAIR/PATCH EXISTING WALL NOTED TO REMAIN IN PREPARATION FOR NEW FINISH.
2. REMOVE EXISTING PLUMBING FIXTURES & CASEWORK, SEE NOTE #4 FOR ADDITIONAL INFO.
3. REMOVE EXISTING CASEWORK REPAIR/PATCH EXISTING WALLS NOTED TO REMAIN AS REQUIRED FOR PREPERATION OF NEW FINISH.
4. REMOVE EXISTING PLUMBING FIXTURES AND CAP PLUMBING LINES AS REQUIRED. SEE PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION.
5. REMOVE EXISTING DOOR/FRAME AND HARDWARE.
6. REMOVE EXISTING CEILING AND ANY ABANDONED CEILINGS THAT MAY BE ABOVE THE EXPOSED CEILING TO BE DEMOLISHED.
7. REMOVE EXISTING SPLIT FACE BLOCK VENEER DOWN TO FIRST FLOOR FINISH FLOOR ELEVATION, TYP. AT ALL LOCATIONS. REFER TO ELEVATIONS FOR ADDITIONAL INFORMATION
8. EXISTING LOUVER TO REMAIN
9. REMOVE EXISTING METAL SIDING WALL PANELS AND ALL ASSOCIATED INSULATION IN ITS ENTIRETY
10. EXISTING STEEL GIRT TO REMAIN
11. REMOVE EXISTING WINDOW/FRAME
12. REMOVE EXISTING 2 TON STEEL CRANE MONORAIL SYSTEM IN ITS ENTIRETY
13. REMOVE EXISTING DOOR/FRAME AND HARDWARE IN ITS ENTIRETY. PREP OPENING AS REQUIRED FOR NEW DOOR/FRAME & HARDWARE
14. REMOVE EXISTING EXTERIOR STAIR SYSTEM AND ASSOCIATED BELOW GRADE FOOTING IN ITS ENTIRETY
15. REMOVE EXISTING BOLLARD, PATCH & REPAIR EXISTING FLOOR AS REQUIRED
16. CAREFULLY REMOVE EXISTING OVERHEAD DOOR/FRAME AND HARDWARE IN ITS ENTIRETY. PREP OPENING AS REQUIRED FOR NEW DOOR FRAME & INSTALLATION OF EXISTING & HARDWARE
17. REMOVE EXISTING WALL FINISH DOWN TO EXISTING STUD FRAMING. PREP EXISTING FRAMING AS REQUIRED FOR INSTALLATION OF NEW FINISH SURFACE. COORDINATE WITH NEW WORK DRAWINGS/SPECIFICATIONS.
18. REMOVE EXISTING CONCRETE PAD TO BE FLUSH WITH ADJACENT CONCRETE SLAB FINISHED FLOOR
19. REMOVE PORTION OF EXISTING GUARDRAIL SYSTEM. GRIND SMOOTH SURFACE OF POST WHICH IS TO REMAIN
20. MODIFY EXISTING WALL FRAMING AS REQUIRED TO INSTALL NEW MAN DOOR. SEE SCHEDULE FOR SIZE.
21. REMOVE PORTION OF EXISTING EXTERIOR WALL. MODIFY EXISTING WALL FRAMING AS REQUIRED TO INSTALL NEW COILING OVERHEAD DOOR. SEE SCHEDULE FOR SIZE.
22. REMOVE EXISTING MTL. BOLLARD FLUSH TO GRADE
23. REMOVE EXISTING METAL ROOF SYSTEM & ASSOCIATED INSUL. IN ITS ENTIRETY
24. REMOVE EXISTING METAL GUTTER & DN. SPOUT IN ITS ENTIRETY
25. REMOVE EXISTING METAL LOUVER, SEE M/P/E DWGS. FOR ADDITIONAL INFO.
26. REMOVE EXISTING EXTERIOR LIGHTING FIXTURE, SEE ELEC. DWGS. FOR ADDITIONAL INFO.
27. REMOVE DAMAGED PORTION OF SPLIT-FACE CMU VENEER. SEE ADDITIONAL NOTE ON D1103 REGARDING REMOVAL/SALVAGE/REINSTALLATION
28. REMOVE EXISTING LOOSE CONCRETE PARGING. PREP. SURFACE AS REQUIRED FOR NEW PARGING
29. REMOVE & RELOCATE EXISTING REFRIGERATOR
30. REMOVE EXISTING INTERIOR METAL WALL PANEL, TYP.
31. REMOVE EXISTING RUBBER BUMPERS AND ASSOCIATED MOUNTING HARDWARE
32. EXISTING FLOOR/FRAMING FOR AREA OF MEZZANINE ABOVE TO BE REMOVED IN ITS ENTIRETY. SUPPORT EXISTING MEZZANINE AREA TO REMAIN AS REQUIRED. COORDINATE WITH NEW WORK PLANS AND STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION

DEMOLITION NOTES:

A. ALL AREAS DESIGNATED BY DASHED LINES ARE TO BE REMOVED. THE CONTRACTOR SHALL VERIFY THESE CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.

B. ALL AREAS AND PARTITIONS NOT DASHED OR NOTED TO BE REMOVED SHALL REMAIN IN TACT. PATCH AND REPAIR EXISTING PARTITIONS AS REQUIRED AFTER DEMOLITION TO MATCH EXISTING OR IN ACCORDANCE WITH PROPOSED RENOVATIONS.

C. PROVIDE INTERIOR AND EXTERIOR SHORING, BRACING, OR OTHER SUPPORT TO PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF ELEMENTS TO BE DEMOLISHED AND ADJACENT EXISTING ELEMENTS TO REMAIN.

D. PROVIDE TEMPORARY WEATHER PROTECTION DURING INTERVAL BETWEEN DEMOLITION AND INSTALLATION OF NEW CONSTRUCTION TO ENSURE THAT WATER LEAKAGE DOES NOT DAMAGE THE STRUCTURE.

E. LOCATE AND IDENTIFY EXISTING UTILITIES, INCLUDING SANITARY SEWER SYSTEM, AND ASCERTAIN THEIR CONDITION TO ENSURE ADEQUATE PERFORMANCE OF ALL UTILITIES IN NEW CONSTRUCTION. PROTECT UTILITY LINES AND HARDWARE DURING DEMOLITION AND CONSTRUCTION PHASES.

F. DEMOLISH CONCRETE AND MASONRY WALLS IN SMALL SECTIONS. CUT CONCRETE AND MASONRY AT JUNCTURES WITH OTHER ELEMENTS TO REMAIN BY USING POWER-DRIVEN MASONRY SAW OR HAND TOOLS. DO NOT USE POWER-DRIVEN IMPACT TOOLS.

G. DISPERSE DEMOLITION EQUIPMENT THROUGHOUT STRUCTURE AND PROMPTLY REMOVE DEBRIS TO AVOID IMPOSING EXCESSIVE LOADS ON SUPPORTING WALLS, FLOORS, OR FRAMING.

H. GENERAL CONTRACTOR IS RESPONSIBLE TO REMOVE FROM BUILDING SITE DEBRIS, TRASH, AND OTHER DISCARDED MATERIALS AND/OR EQUIPMENT RESULTING FROM DEMOLITION OPERATIONS. TRANSPORT AND LEGALLY DISPOSE OFF SITE.

I. IF HAZARDOUS MATERIALS ARE ENCOUNTERED DURING DEMOLITION OPERATIONS, COMPLY WITH APPLICABLE REGULATIONS, LAWS, AND ORDINANCES CONCERNING REMOVAL, HANDLING, AND PROTECTION AGAINST EXPOSURE OR ENVIRONMENTAL POLLUTION.

J. BURNING OF REMOVED MATERIALS IS NOT PERMITTED ON THE PROJECT SITE.

K. COORDINATE ALL DEMOLITION WITH OWNER AND OTHER TRADES. CONFIRM THE EXTENT, TIMING, AND ITEMS TO BE SALVAGED WITH OWNER. CONTRACTOR SHALL SCHEDULE WORK, SO AS NOT TO UNDULY INTERFERE WITH OWNER'S OPERATIONS.

L. SEE M/P/E DRAWINGS FOR COORDINATION & FURTHER INFORMATION OF MECHANICAL AND ELECTRICAL DEMOLITION.

ROBERT A. GROVE No. S5-0832 STATE OF DELAWARE REGISTERED ARCHITECT

R G Architects, LLC
200 West Main St., Middletown, DE 19709
302.376.8100 302.376.9851 fax
www.rgarchitects.net

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

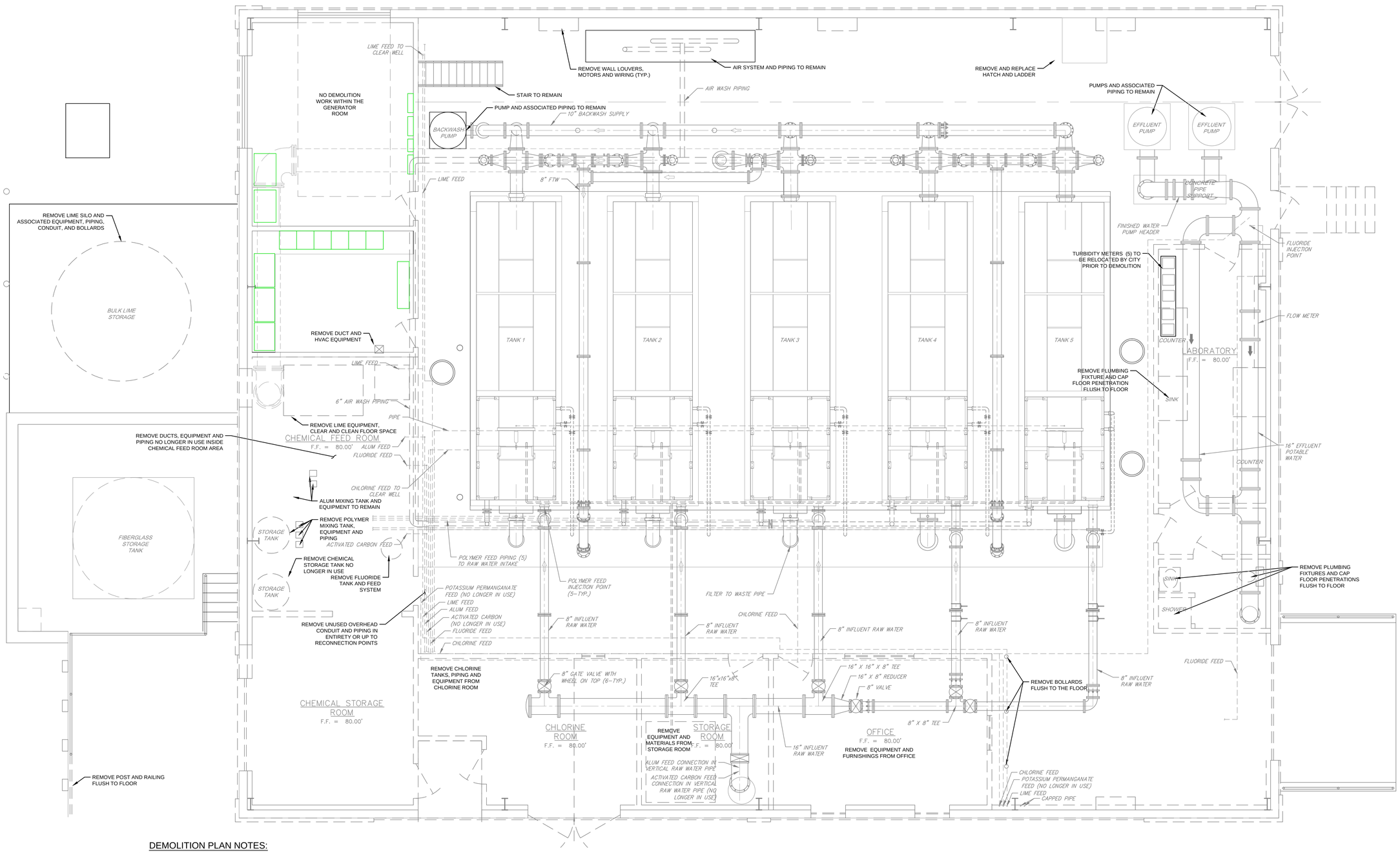
FLOOR PLAN DEMOLITION

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	MWF/BWM
APPROVED BY	DPB

D0501



DEMOLITION PLAN NOTES:

1. CONTRACTOR SHALL WORK WITH CARE TO VERIFY EXISTING UTILITIES, PIPES, CONDUITS, WIRES, AND EQUIPMENT ARE REMOVED, TERMINATED, OR SUPPORTED PRIOR TO REMOVAL OF THE WALLS AND CEILINGS OF THE INTERIOR ROOMS.
2. CONTRACTOR SHALL COORDINATE DEMOLITION WITH THE CITY FOR REMOVAL AND REUSE OF MATERIALS AND EQUIPMENT INCLUDING EXISTING MONITORING EQUIPMENT AND CHEMICAL PUMPS.
3. CONTRACTOR SHALL COORDINATE DEMOLITION WITH THE CITY TO LIMIT INTERRUPTION OF OPERATIONS ACTIVITY.
4. CLEAR WELL OPENINGS SHALL BE COVERED DURING DEMOLITION WORK.
5. WATER FILTER TANKS SHALL BE PROTECTED FROM DEBRIS AND DUST FROM CONSTRUCTION AT ALL TIMES USING CONTAINMENT CURTAINS OR TANK COVERS.
6. FLOOR DRAINS SHALL BE COVERED DURING DEMOLITION TO PREVENT DEBRIS FROM ENTERING THE SANITARY SEWER DRAIN PIPE.
7. WALL ANCHORS SET IN FLOOR SHALL BE CUT OR GROUND FLUSH TO THE FLOOR AND SEALED IN PLACE.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR LAWFUL DISPOSAL OF REMOVED MATERIALS.

EQUIPMENT AND MATERIALS DEMOLITION

SCALE: 1/4" = 1'-0"

0 1' 2' 4' 8'

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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BRIAN W. MILLER LICENSED No. 18878 2017-11-21 DELAWARE PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

EQUIPMENT AND MATERIALS DEMOLITION

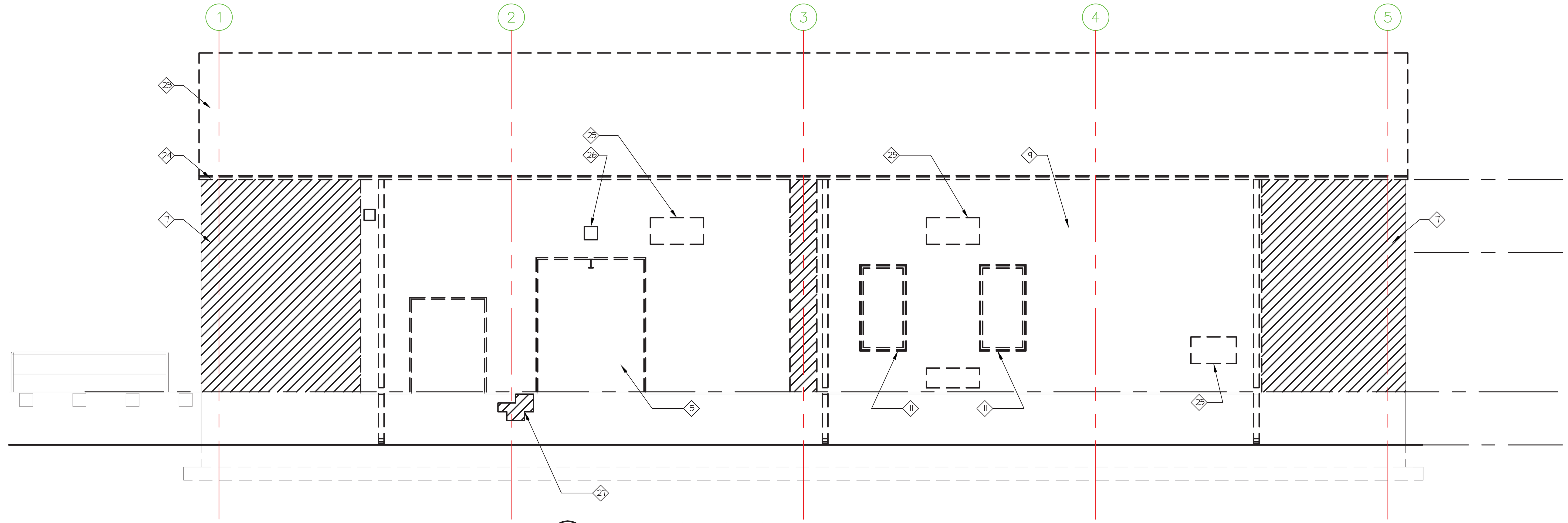
CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

BY	REVISIONS	NO.	DATE

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	MWF/BWM
APPROVED BY	---

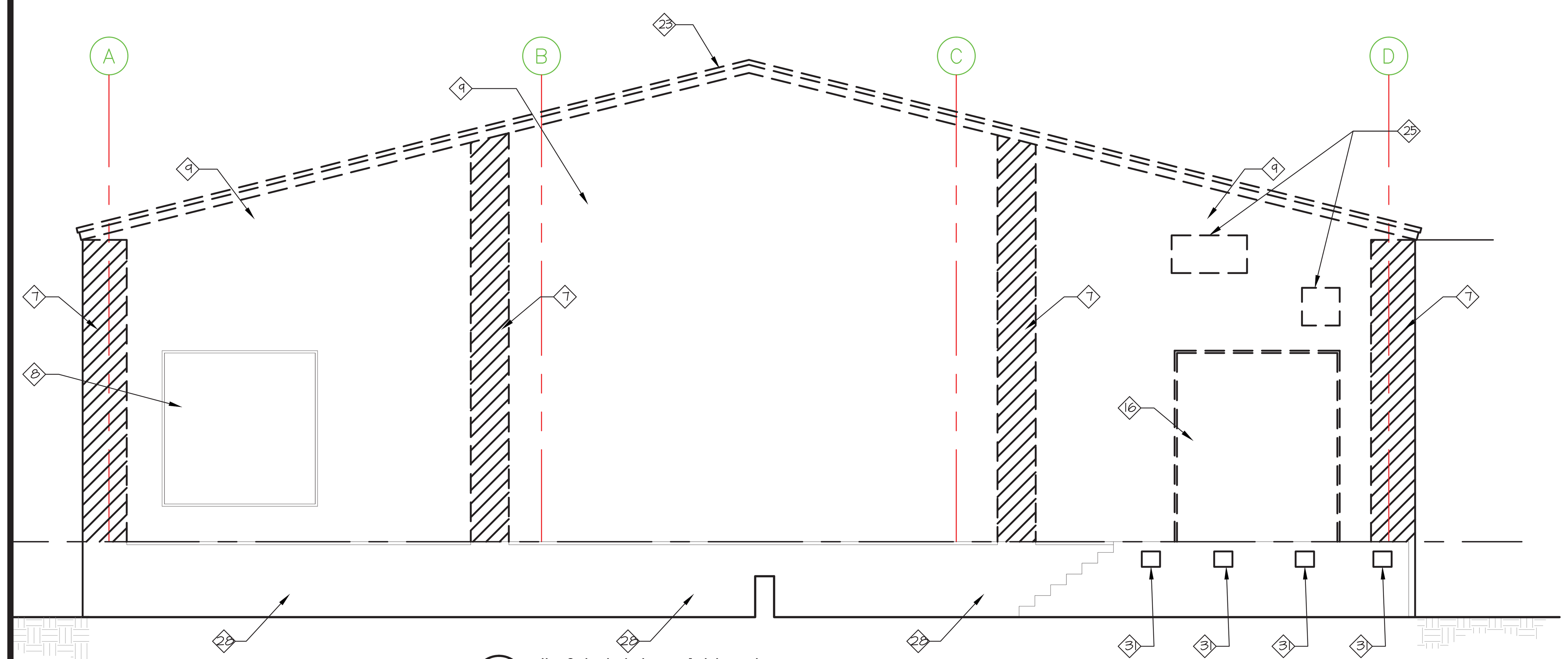
D0502

SHEET 3 OF 54



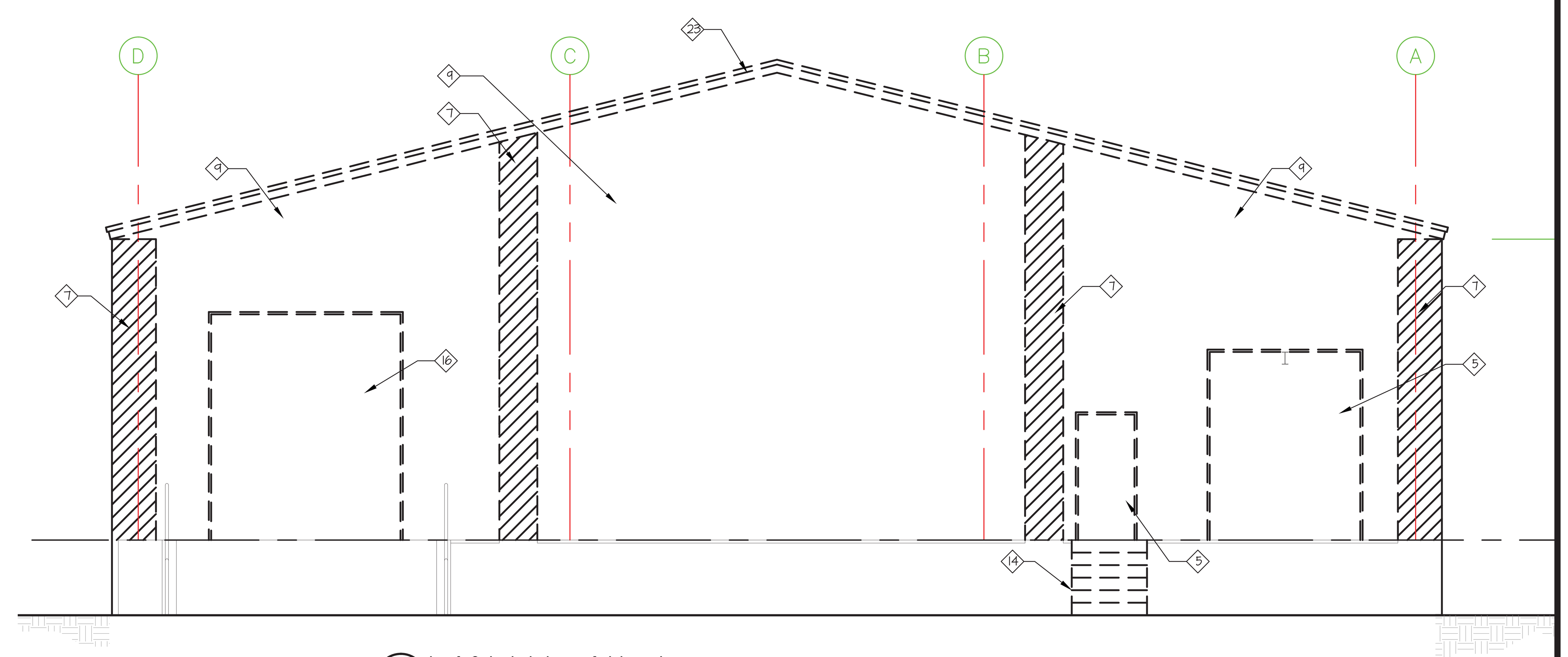
1 SOUTH ELEVATION
SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'



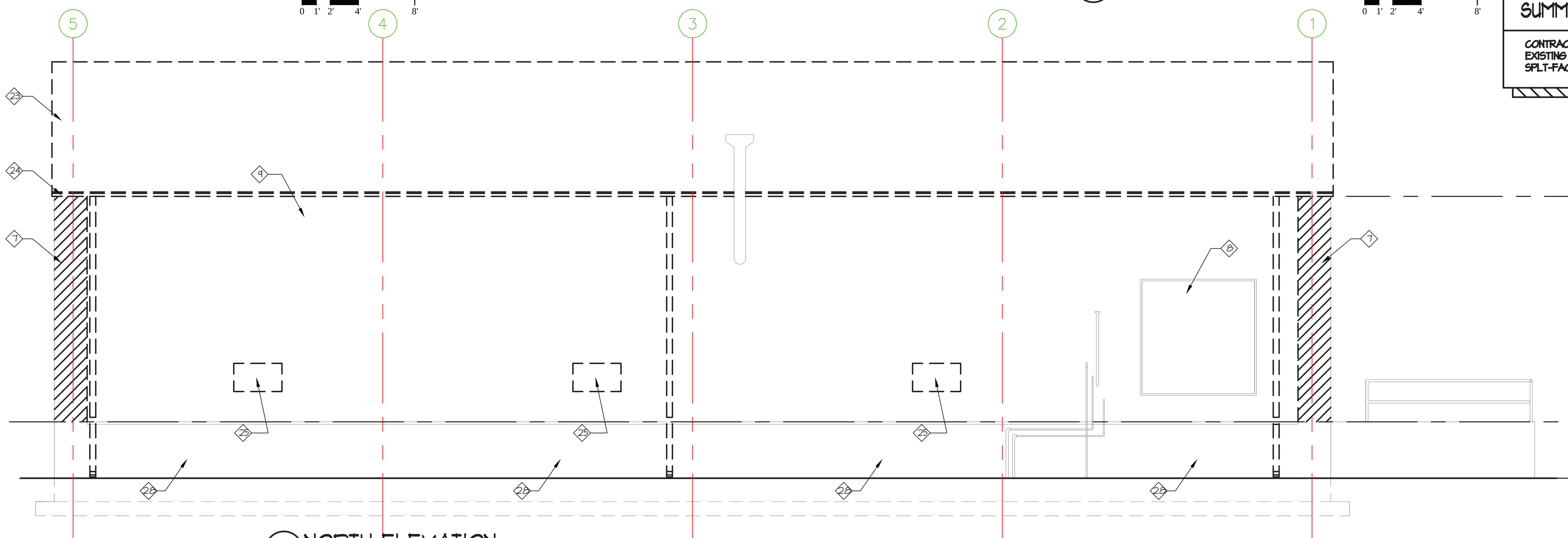
2 WEST ELEVATION
SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'



3 EAST ELEVATION
SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'



4 NORTH ELEVATION
SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'

DEMOLITION KEY NOTES

- 5 REMOVE EXISTING DOOR/FRAME AND HARDWARE.
- 7 REMOVE EXISTING SPLIT FACE BLOCK VENEER DOWN TO FIRST FLOOR FINISH FLOOR ELEVATION, TYP. AT ALL LOCATIONS. REFER TO ELEVATIONS FOR ADDITIONAL INFORMATION
- 9 REMOVE EXISTING METAL SIDING WALL PANELS AND ALL ASSOCIATED INSULATION IN ITS ENTIRETY
- 11 REMOVE EXISTING WINDOW/FRAME
- 14 REMOVE EXISTING EXTERIOR STAIR SYSTEM AND ASSOCIATED BELOW GRADE FOOTING IN ITS ENTIRETY
- 16 CAREFULLY REMOVE EXISTING OVERHEAD DOOR/FRAME AND HARDWARE IN ITS ENTIRETY. PREP OPENING AS REQUIRED FOR NEW DOOR FRAME & INSTALLATION OF EXISTING & HARDWARE
- 23 REMOVE EXISTING METAL ROOF SYSTEM & ASSOCIATED INSUL. IN ITS ENTIRETY
- 24 REMOVE EXISTING METAL GUTTER & DN. SPOUT IN ITS ENTIRETY
- 25 REMOVE EXISTING METAL LOUVER, SEE M/P/E DWGS. FOR ADDITIONAL INFO.
- 26 REMOVE EXISTING EXTERIOR LIGHTING FIXTURE, SEE ELEC. DWGS. FOR ADDITIONAL INFO.
- 27 REMOVE DAMAGED PORTION OF SPLIT-FACE CMU VENEER. SEE ADDITIONAL NOTE ON D1103 REGARDING REMOVAL/SALVAGE/REINSTALLATION
- 28 REMOVE EXISTING LOOSE CONCRETE PARGING. PREP. SURFACE AS REQUIRED FOR NEW PARGING
- 31 REMOVE EXISTING RUBBER BUMPERS AND ASSOCIATED MOUNTING HARDWARE

EXISTING CMU VENEER

CONTRACTOR SHALL SALVAGE, CLEAN & REPAIR SUFFICIENT QUANTITY OF EXISTING CMU IN ORDER TO PATCH & REPLACE DAMAGED SECTIONS OF SPLT-FACE CMU VENEER AS INDICATED.

SUMMARY OF SCOPE OF DEMOLITION WORK

CONTRACTOR SHALL SALVAGE, CLEAN & REPAIR SUFFICIENT QUANTITY OF EXISTING CMU IN ORDER TO PATCH & REPLACE DAMAGED SECTIONS OF SPLT-FACE CMU VENEER AS INDICATED.

ROBERT A. GROVE No. S5-08320 STATE OF DELAWARE REGISTERED ARCHITECT

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www.rgarchitects.net

0 1' 2' 4' 8'

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

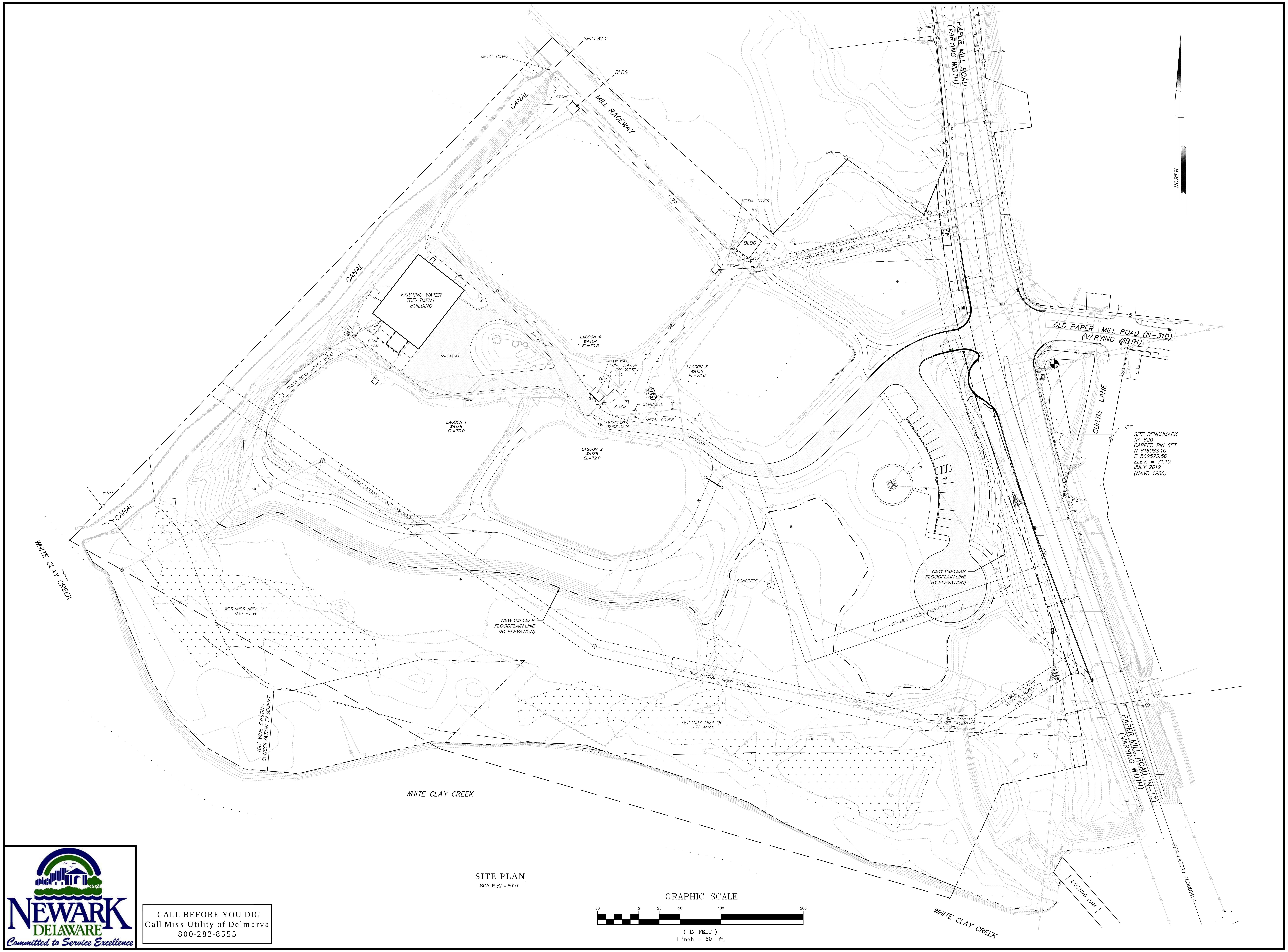
ELEVATIONS DEMOLITION

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	RG ARCHITECTS
APPROVED BY	RG ARCHITECTS

D0503



SITE PLAN
SCALE: 1/4" = 50'-0"

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BRIAN W. MILLER
LICENSED
No. 18876
2017-11-17
DELAWARE
PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

EXISTING SITE PLAN

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	---
APPROVED BY	---

CM0201

LAGOON 4

HARON

GATE TO LAGOON ACCESS

PARKING AREA / WORKSPACE

ACCESS DRIVE TO REMAIN OPEN UNLESS COORDINATED WITH CITY STAFF

RAW WATER PUMP STATION

MONITORED SLIDE GATE

ACCESS DRIVE TO REMAIN OPEN UNLESS COORDINATED WITH CITY STAFF

WATER TREATMENT BUILDING REHABILITATION

PARKING AREA / WORKSPACE

ACCESS DRIVE TO REMAIN OPEN UNLESS COORDINATED WITH CITY STAFF

UP#8C44

LAGOON 1

TRANSFORMER AND PAD TO REMAIN

REHAB CONCRETE SLAB FLUSH AT EVEN GRADE

REMOVE BOLLARDS

PARKING AREA / WORKSPACE

GATE TO LAGOON ACCESS

SITE PLAN
SCALE: 1" = 10'

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

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BRIAN W. MILLER LICENSED PROFESSIONAL ENGINEER No. 18876 2017-11-21 DELAWARE

CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

WATER TREATMENT FACILITY SITE PLAN

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

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PROJECT	CNEW1612
DATE	APRIL 2017
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CM0202

SHEET 6 OF 54

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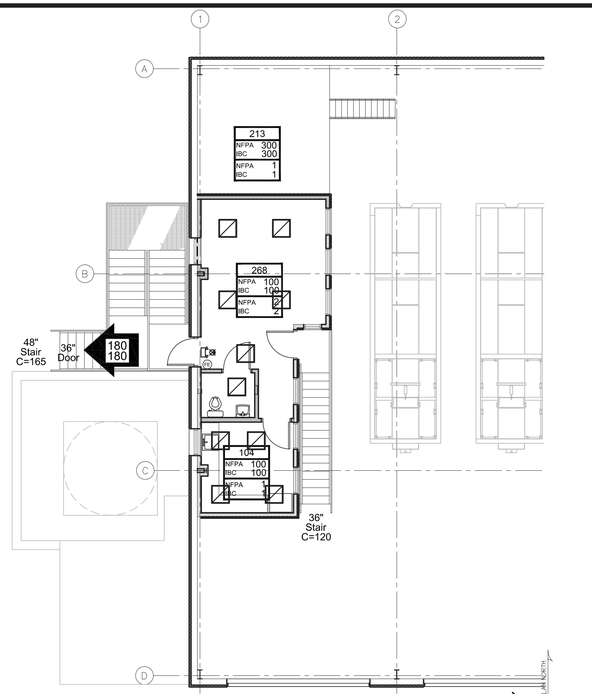
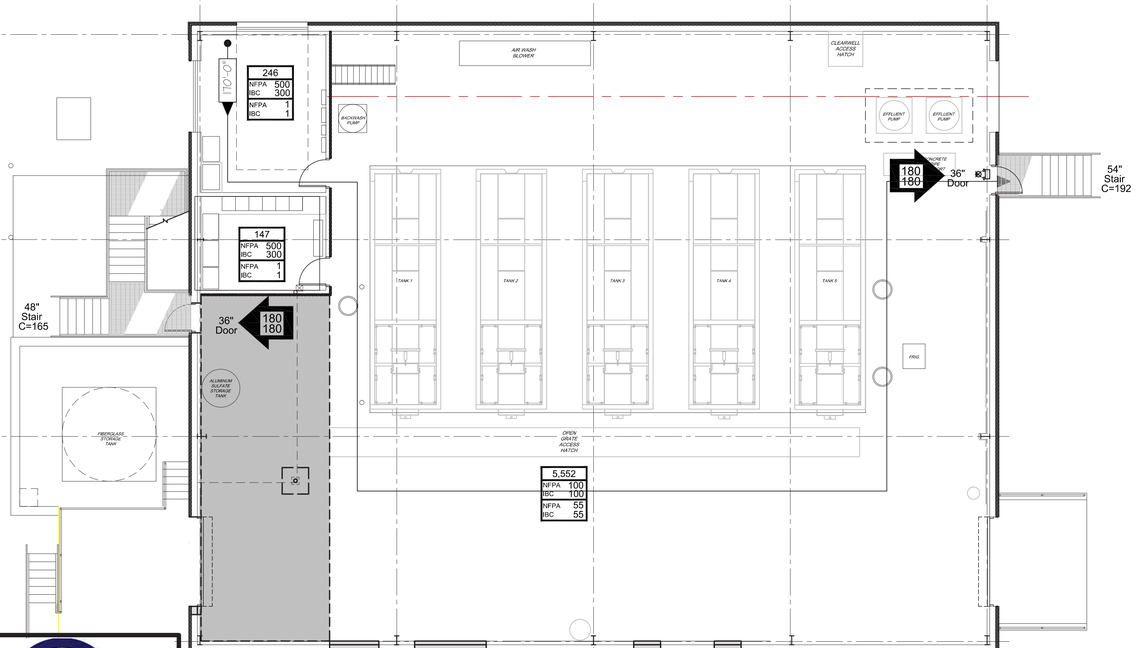


2 MEZZANINE FLOOR CODE PLAN
SCALE : 1/8" = 1'-0"

0 2' 4' 8' 16'



1 FIRST FLOOR CODE PLAN
SCALE : 1/8" = 1'-0"

0 2' 4' 8' 16'

EGRESS SYMBOLS LEGEND

X,XXX	Area / sq ft	XX" Door (s)	Exit Capacity
NFPA XX / IBC XX	Exit Generator / Occs/sf	XXX / XXX	Exit Component/drs/stairs/etc
NFPA XXX / IBC XXX	Occupants	EXIT	Occupants / NFPA (top) / Occupants / IBC (bottom)
			Exit Path

EGRESS PATH

60' TRAVEL DISTANCE SHOWING DIRECTION

TRAVEL DIRECTION

GENERAL INFORMATION

CODE REVIEW BASE DATA AND COMMENTS ARE AS FOLLOWS:

PRIMARY CODES:

- IBC 2012 (INTERNATIONAL BUILDING CODE)
- IPC 2012 (INTERNATIONAL PLUMBING CODE)
- IMC 2012 (INTERNATIONAL MECHANICAL CODE)
- NEC 2015 (NATIONAL ELECTRICAL CODE)
- IECC 2012 (INTERNATIONAL ENERGY CONSERVATION CODE)
- NFPA 101 LIFE SAFETY CODE, 2015 EDITION
- DE STATE FIRE PREVENTION REGS, 2014
- ANSI A117.1, 2009

PROJECT DESCRIPTION:
PROJECT INVOLVES RENOVATIONS TO AN EXISTING WATER TREATMENT PLANT ORIGINALLY CONSTRUCTED IN 1990. THE BUILDING WAS CONSTRUCTED WITH LABORATORY SPACES AND CHEMICAL STORAGE ROOMS WHICH WILL BE REMOVED FROM THE MAIN FLOOR. A SECOND FLOOR WILL BE CONSTRUCTED ABOVE THE EXISTING ELECTRICAL AND GENERATOR ROOMS AND WILL HOUSE NEW OFFICE SPACES. THE BUILDING WILL CONTINUE TO OPERATE IN THE SAME MANNER.

THE BUILDING IS OCCUPIED AND OPERATES 24 HOURS A DAY PROVIDING TREATED WATER FOR THE CITY OF NEWARK.

IBC - 2012	NFPA 101 - 2015

OCCUPANCY CLASSIFICATION

IBC
OCCUPANCY: FACTORY
IBC - USE GROUP F-1

NFPA
101 LSC - INDUSTRIAL, Chptr 40

CONSTRUCTION TYPE CLASSIFICATION

IBC - EXISTING TYPE II-B

NFPA - TYPE II (000)

HEIGHT & AREA LIMITATIONS

IBC - TABLE 503

	HEIGHT		AREA	
GROUP	Allowable	Actual	Allowable	Actual
F-1	2 stories	2 stories	15,500	6,300

NFPA 5000 - TABLE 7.4.1

	HEIGHT		AREA	
Occupancy	Allowable	Actual	Allowable	Actual
Industrial ordinary hazard	2 stories	2 stories	15,500	6,300

FIRE RESISTANCE RATINGS - CONSTRUCTION TYPE LIMITATIONS

IBC SECTION 601, TABLE 601
FIRE RESIST. RATING REQMTS FOR BLDG ELEMENTS (HOURS)

BUILDING ELEMENT	TYPE II-A
PRIMARY STRUCTURAL FRAME	0
BEARING WALLS	
EXTERIOR	0
INTERIOR	0
NON-BEARING WALLS AND PARTITIONS - EXTERIOR	SEE TABLE 602
NON-BEARING WALLS AND PARTITIONS - INTERIOR	0
FLOOR CONSTRUCTION AND ASSOC. SECOND. MEMBER	0
ROOF CONSTRUCTION AND ASSOC. SECOND. MEMBER	0

NFPA
40.1.6 No special requirements

OCCUPANT LOAD CALCULATIONS

IBC (TABLE 1004.1.2):

SPACE	AREA/OCC.		CALCULATED
FIRST FLOOR			
FACTORY (F-1)	100 GSF/OCC.	=	55 OCC.
MECHANICAL/EQUIP.	300 GSF/OCC	=	2 OCC.
TOTAL			57 OCC.
MEZZANINE FLOOR			
BUSINESS	100 GSF/OCC.	=	3 OCC.
STORAGE	300 GSF/OCC	=	1 OCC.
TOTAL			4 OCC.

NFPA 101 (TABLE 7.3.1.2):

SPACE	OCCUPANT LOAD FACTOR		CALCULATED
FIRST FLOOR			
INDUSTRIAL	100 GSF/OCC.	=	55 OCC.
MECHANICAL/EQUIP.	500 GSF/OCC.	=	2 OCC.
TOTAL			57 OCC.
MEZZANINE FLOOR			
BUSINESS	100 GSF/OCC.	=	3 OCC.
STORAGE	300 GSF/OCC.	=	1 OCC.
TOTAL			4 OCC.

MEANS OF EGRESS CRITERIA

Capacity
IBC (1005 MEANS OF EGRESS SIZING)
NON-SPRINKLERED BUILDING

STAIRS	.3"/occupant
ALL OTHER	.2"/occupant

Travel Distance
TRAVEL DISTANCE (1016.2)

F-1	200 feet

DEAD-END CORRIDOR (1018.4.2)

F-1	20 feet

COMMON PATH OF TRAVEL (1014.3)

F-1	75 feet

Capacity
NFPA 101 (7.3.3.1)
Component

STAIRS	.3"/occupant
ALL OTHER	.2"/occupant

Travel Distance
TRAVEL DISTANCE

General Ind.	200 feet (40.2.6.1)

DEAD-END CORRIDOR

General Ind.	50 feet (40.2.5.1)

COMMON PATH OF TRAVEL

General Ind.	50 feet (40.2.5.1)

MEANS OF EGRESS CAPACITY

IBC (1005):

SPACE			CALCULATED
FIRST FLOOR			
2 DOORS @ 36" (36/.2) * 2	=		360 OCC.
CALCULATED OCCUPANTS	=		57 OCC.
EGRESS CAPACITY SPARE			303 OCC.
MEZZANINE LEVEL			
1 STAIR @ 48"	=		165 OCC.
1 STAIR @ 36"	=		120 OCC.
CALCULATED OCCUPANTS	=		4 OCC.
EGRESS CAPACITY SPARE			281 OCC.

REQUIRED EGRESS CAPACITY EXCEEDS TOTAL CALCULATED OCCUPANT LOADS FOR EACH FLOOR

NFPA 101 (TABLE 7.3.1.1):

SPACE			CALCULATED
FIRST FLOOR			
2 DOORS @ 36" (36/.2) * 2	=		360 OCC.
CALCULATED OCCUPANTS	=		57 OCC.
EGRESS CAPACITY SPARE			303 OCC.
MEZZANINE LEVEL			
1 STAIR @ 48"	=		165 OCC.
1 STAIR @ 36"	=		120 OCC.
CALCULATED OCCUPANTS	=		4 OCC.
EGRESS CAPACITY SPARE			281 OCC.

REQUIRED EGRESS CAPACITY EXCEEDS TOTAL CALCULATED OCCUPANT LOADS FOR EACH FLOOR

101 LSC (7.3.3.2*) Stairways wider than 44in.

C=146.7 + (Wn - 44/0.218)

C= Capacity, in persons, rounded to the nearest integer
Wn= nominal width of the stair as permitted by 7.3.2.2 (in.)
See plans for egress capacity of stairs

PLUMBING REQUIREMENTS

OCCUPANCY : F-1	MALE REQUIRED	FEMALE REQUIRED	TOTAL REQUIRED	EXISTING	PROPOSED	TOTAL
WATER CLOSETS	1		1	1	1	1
LAVATORIES	1		1	2	2	2
DRINKING FOUNTAINS	1		1	0	0	0
SERVICE SINK	1		1	0	0	0

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

ARCHITECTURAL CODE PLAN

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	RG ARCHITECTS
APPROVED BY	RG ARCHITECTS

A1001

SHEET 7 OF 54

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0 1' 2' 4' 8'

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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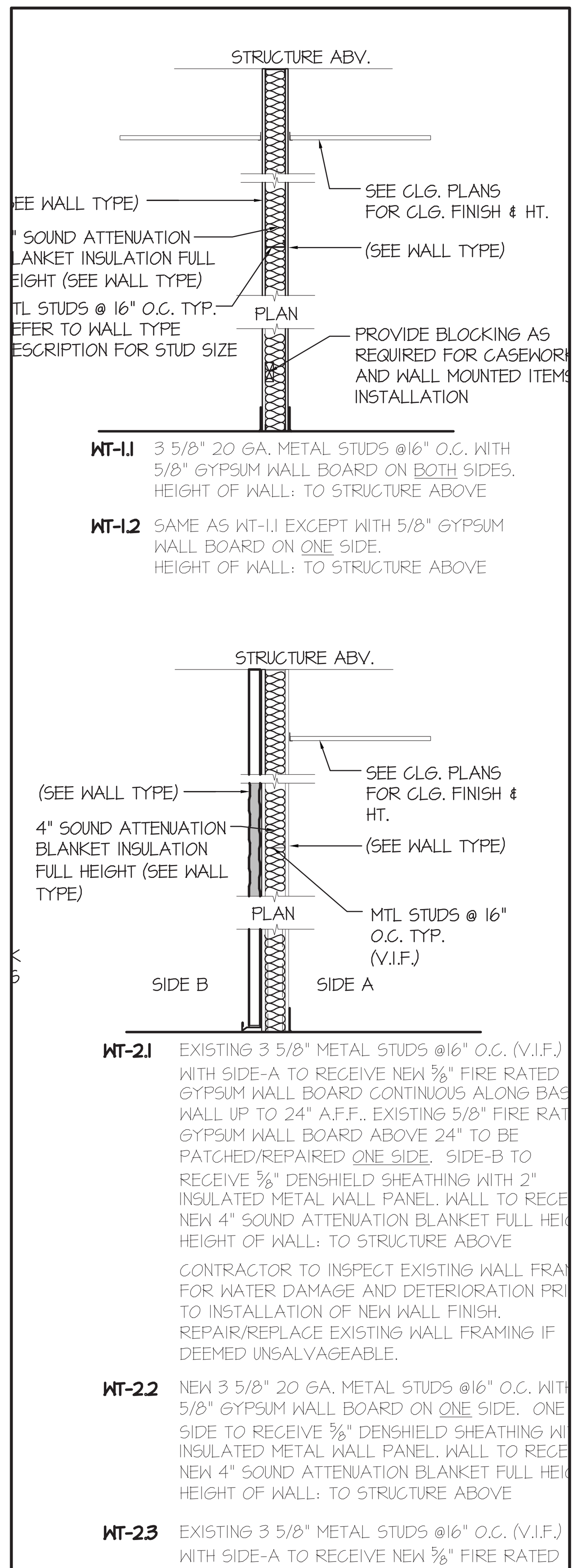
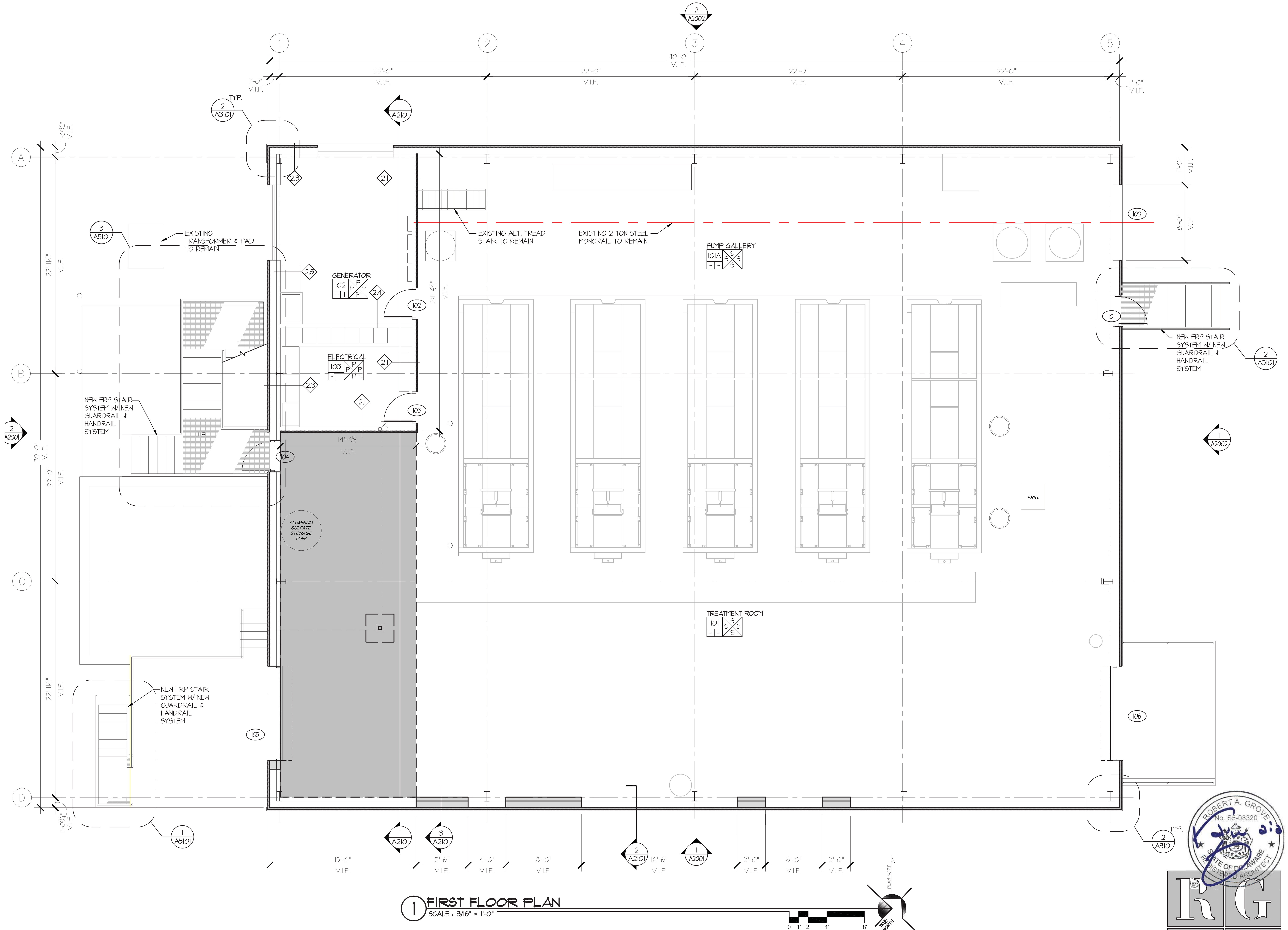


2 WALL TYPES
SCALE : N.T.S.

GENERAL PARTITION NOTES:

1. PROVIDE MOISTURE RESISTANT GYPSUM WALL BOARD AT ALL WET & TOILET/BATHROOM LOCATIONS.
2. PROVIDE TILE BACKER BOARD AT ALL TILE LOCATIONS.
3. SEE ROOM FINISH TAGS FOR ADDITIONAL WALL FINISH SPECIFICATIONS.



1 FIRST FLOOR PLAN
SCALE : 3/16" = 1'-0"

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FIRST FLOOR PLAN

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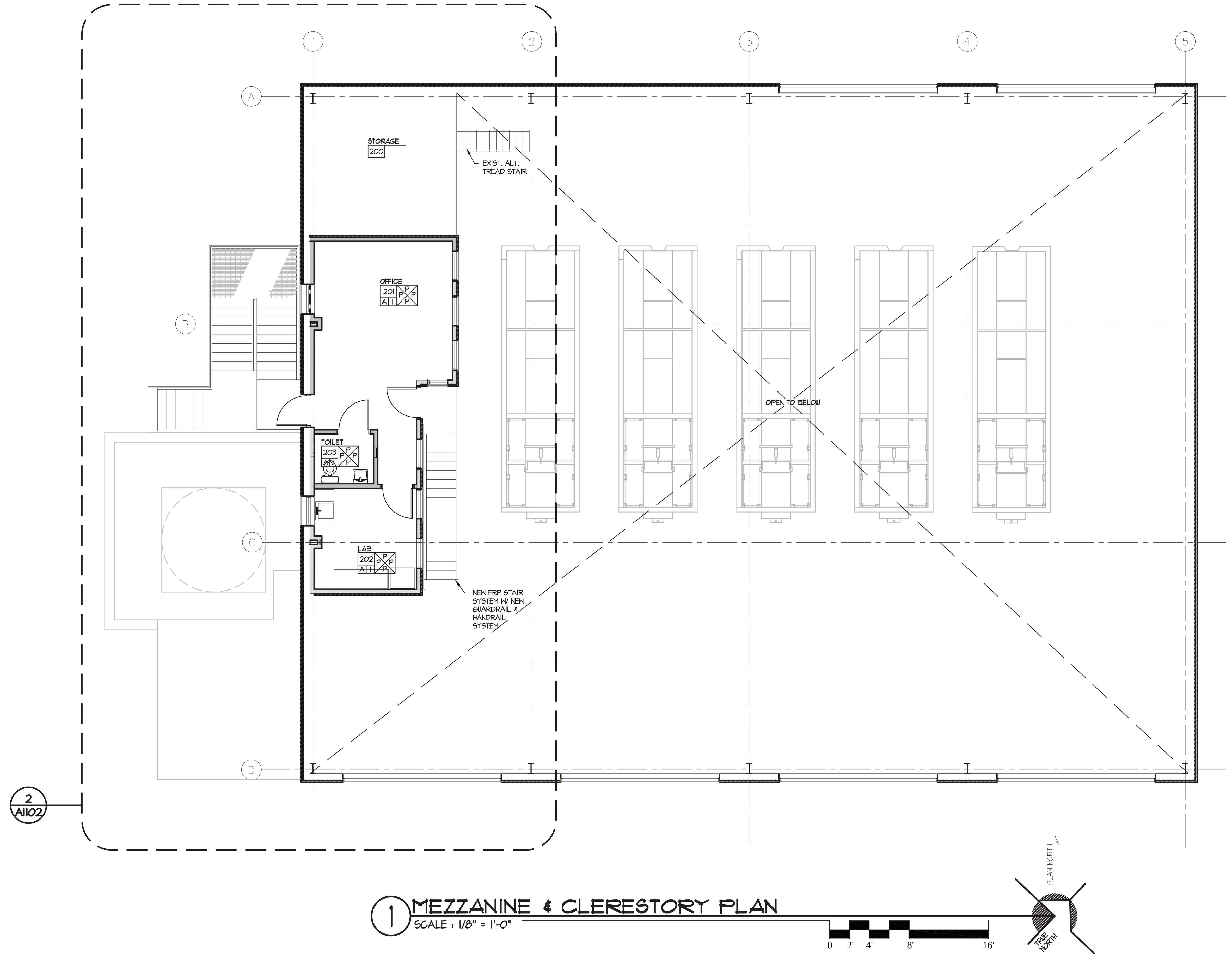
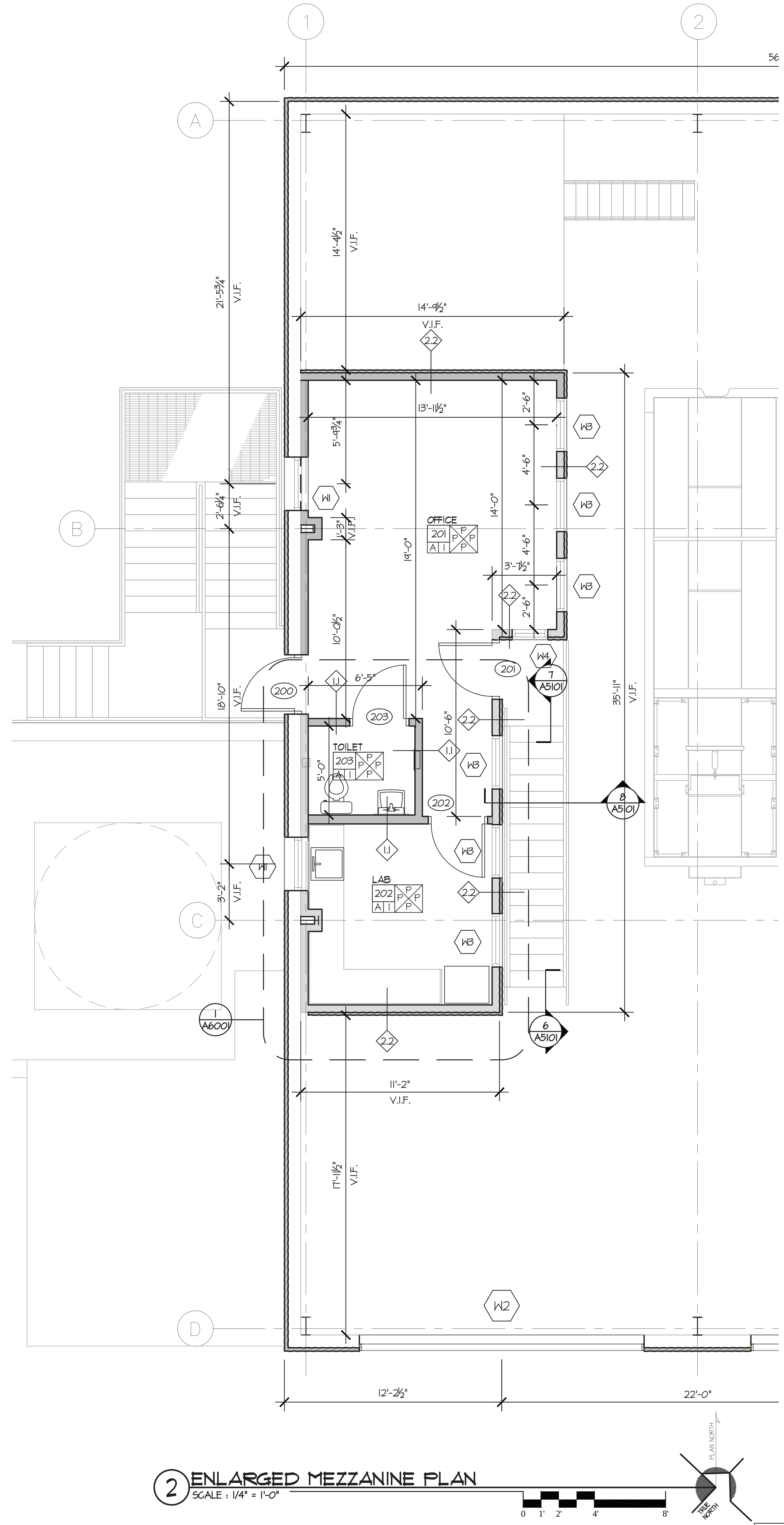


1 MEZZANINE & CLERESTORY PLAN
SCALE : 1/8" = 1'-0"



2 ENLARGED MEZZANINE PLAN
SCALE : 1/4" = 1'-0"

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215 PAPER MILL ROAD
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ROOF & MEZZANINE FLOOR PLAN

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
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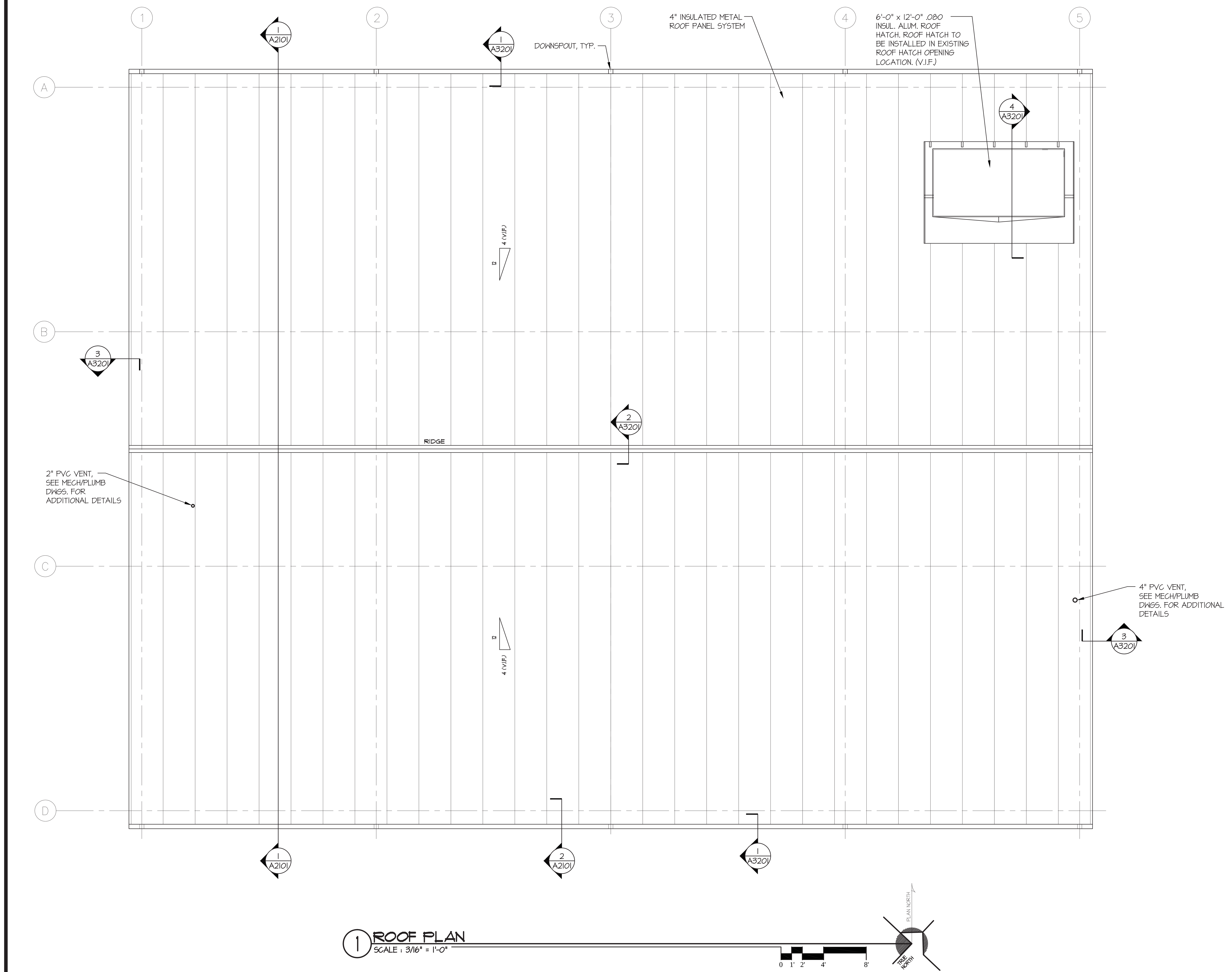
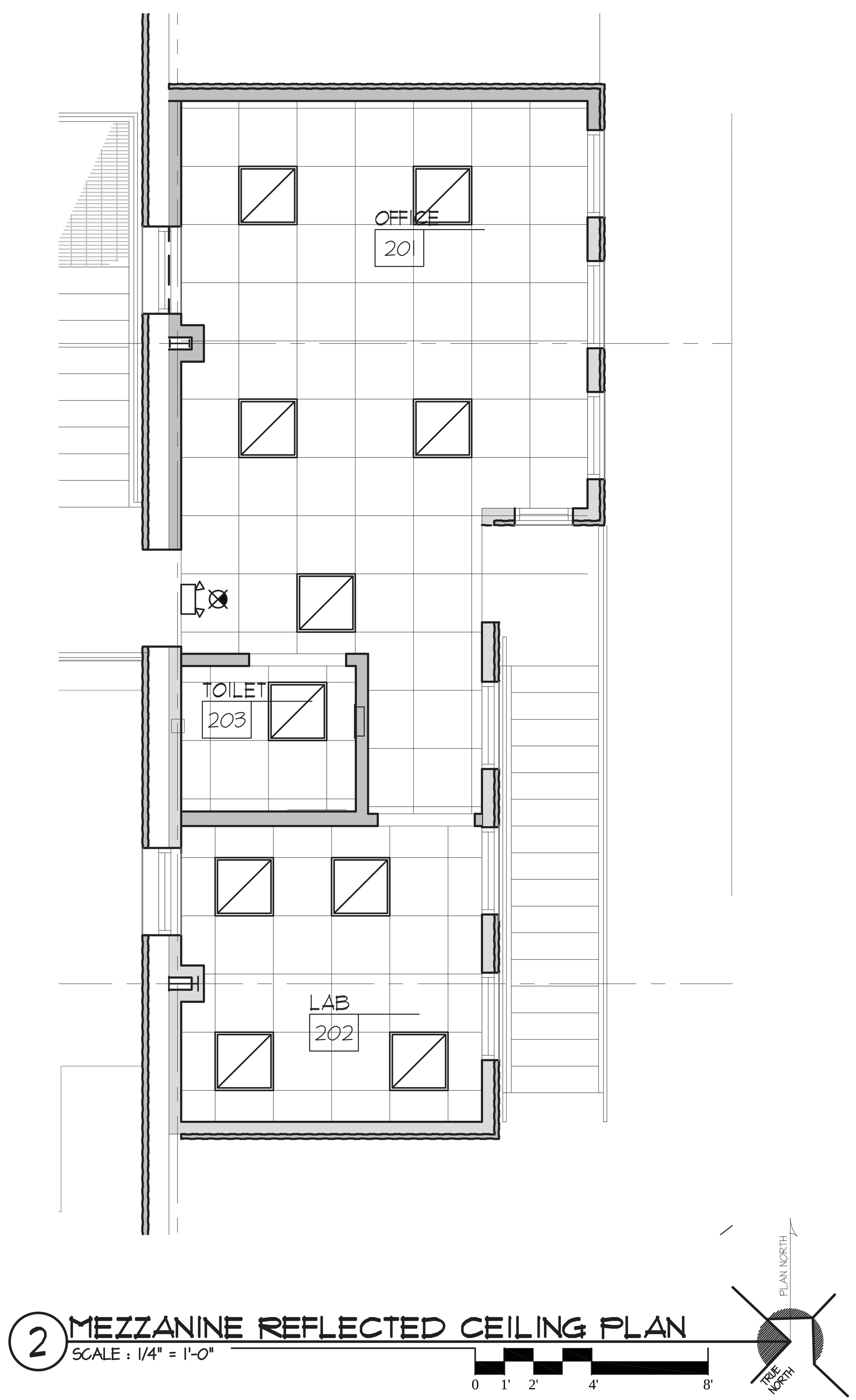


1 ROOF PLAN
SCALE : 3/16" = 1'-0"



2 MEZZANINE REFLECTED CEILING PLAN
SCALE : 1/4" = 1'-0"

REFLECTED CEILING LEGEND

- EMERGENCY LIGHTING W/ BATTERY BACKUP
- ILLUMINATED EXIT SIGN
- 2'X2' SUSPENDED ACOUSTIC CIELING SYSTEM
- 2'X2' LIGHT FIXTURE - SEE ELECT. DWGS
- 2'X2' MECHANICAL SUPPLY
- 2'X2' MECHANICAL RETURN

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ROOF PLAN

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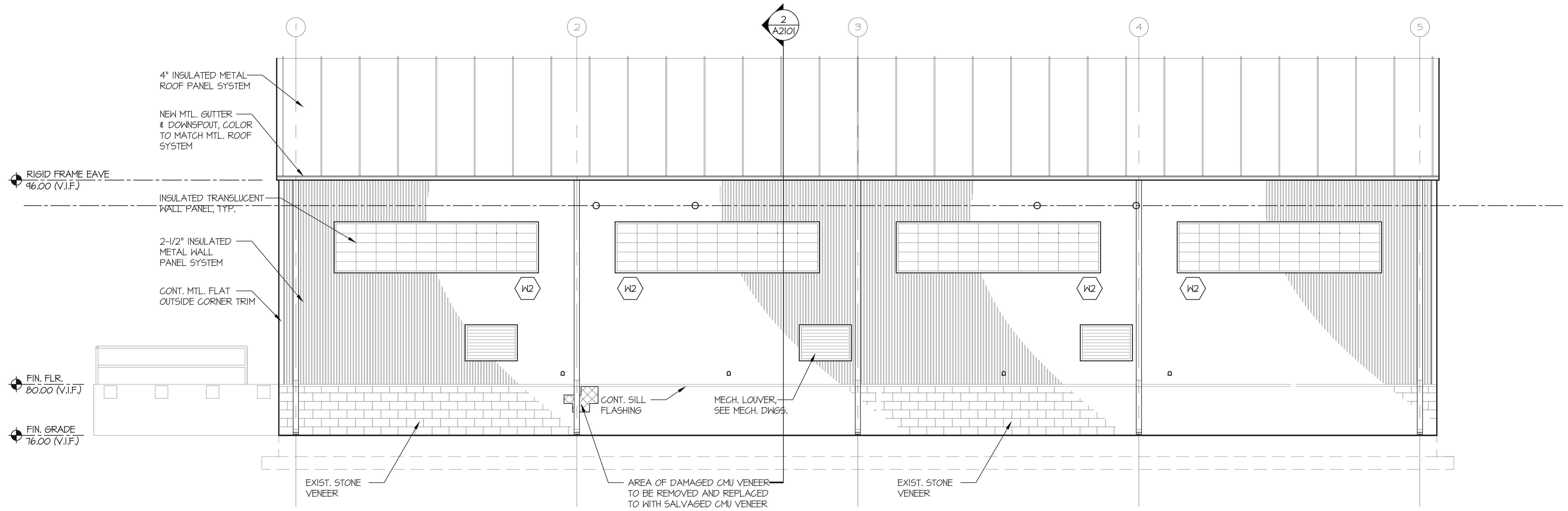
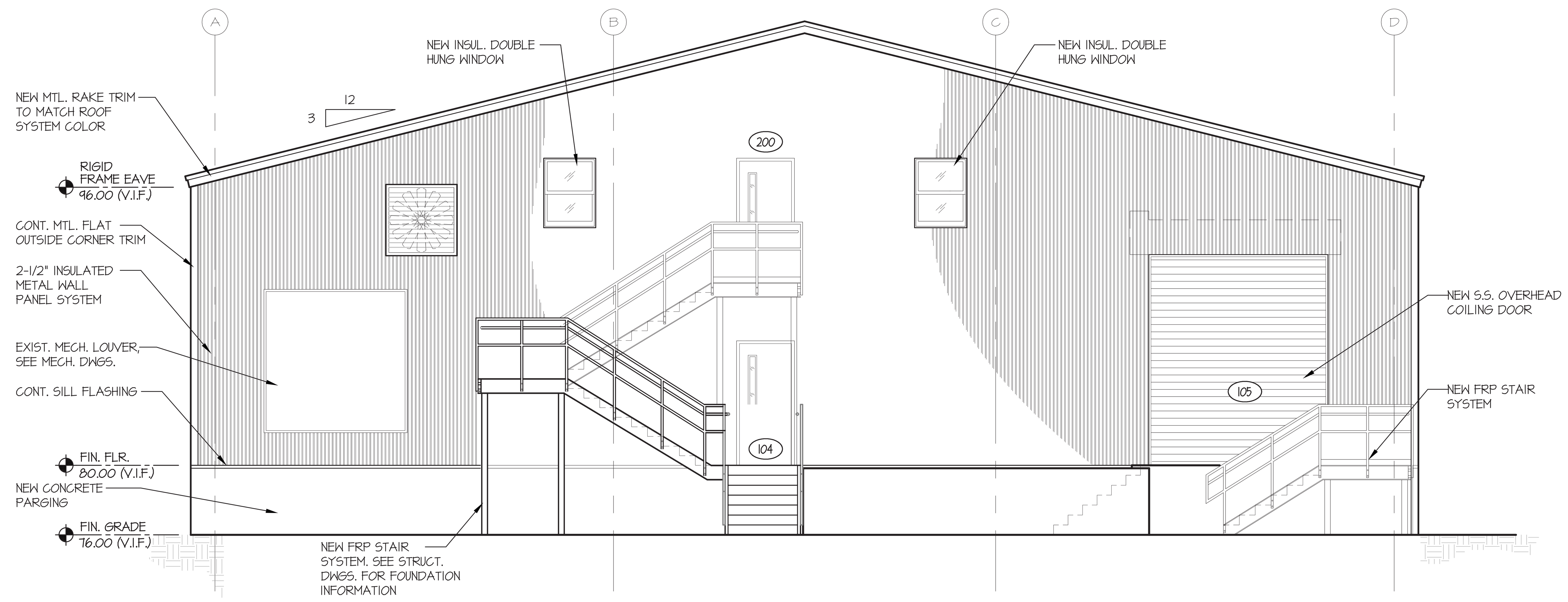


1 SOUTH ELEVATION
SCALE : 3/16" = 1'-0"



2 WEST ELEVATION
SCALE : 3/16" = 1'-0"

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NEWARK, DELAWARE

SOUTH & WEST ELEVATIONS

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
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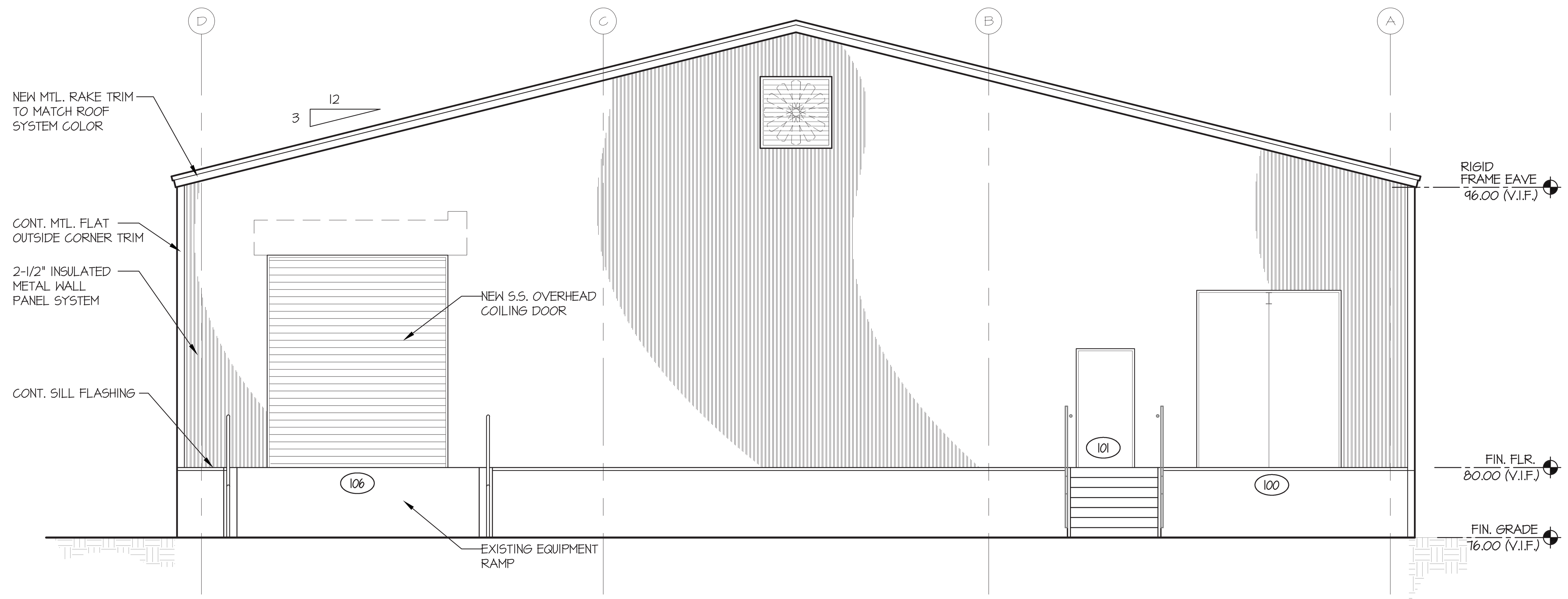
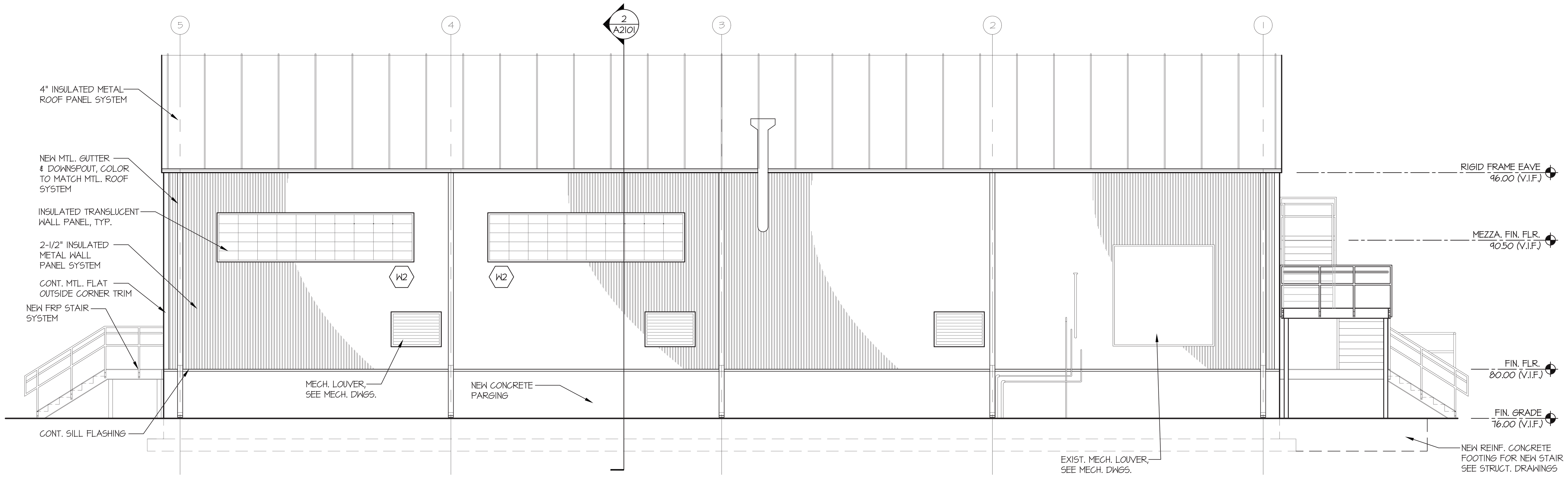
A2001



1 EAST ELEVATION
SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'



2 NORTH ELEVATION
SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'

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0 1' 2' 4' 8'

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

NORTH & EAST ELEVATIONS

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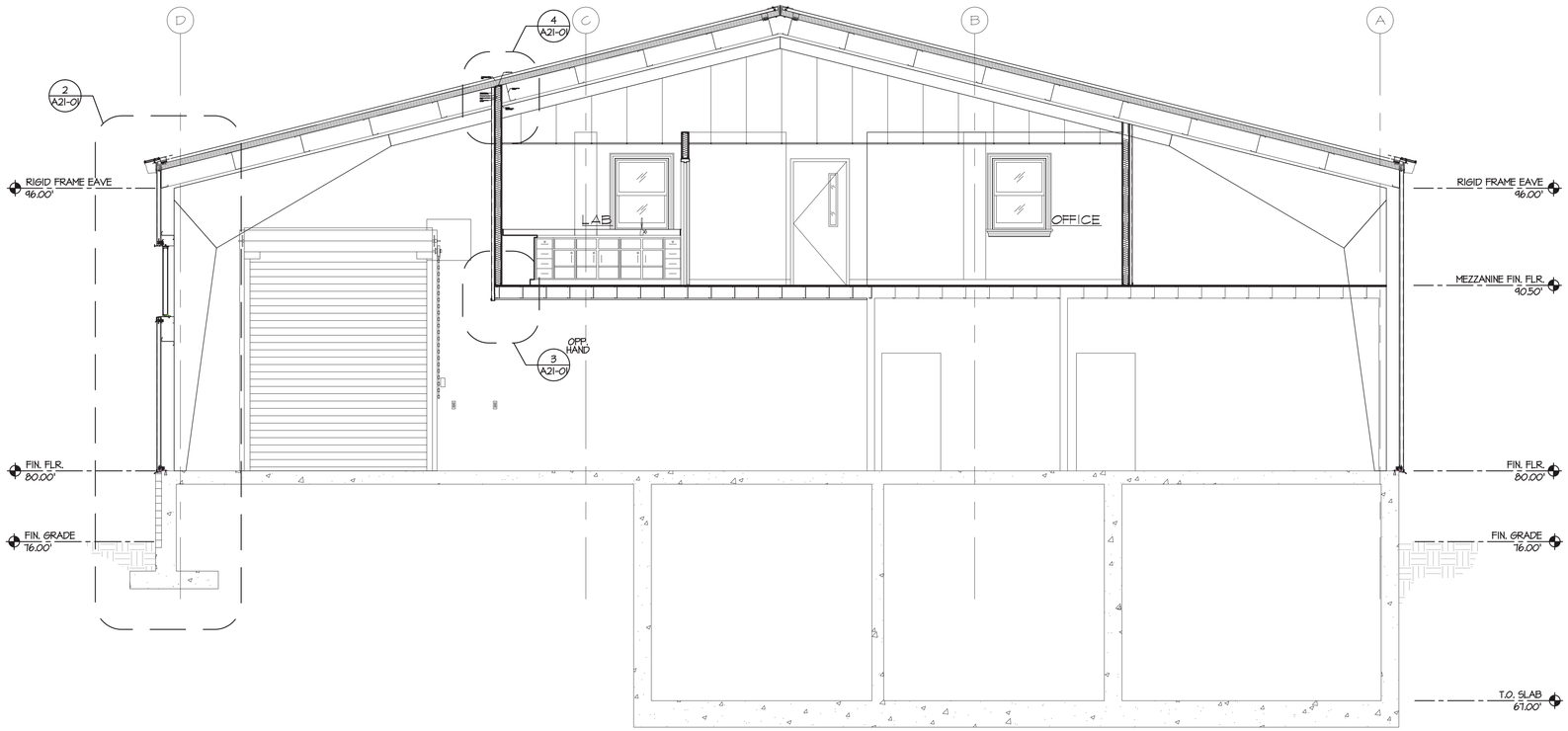
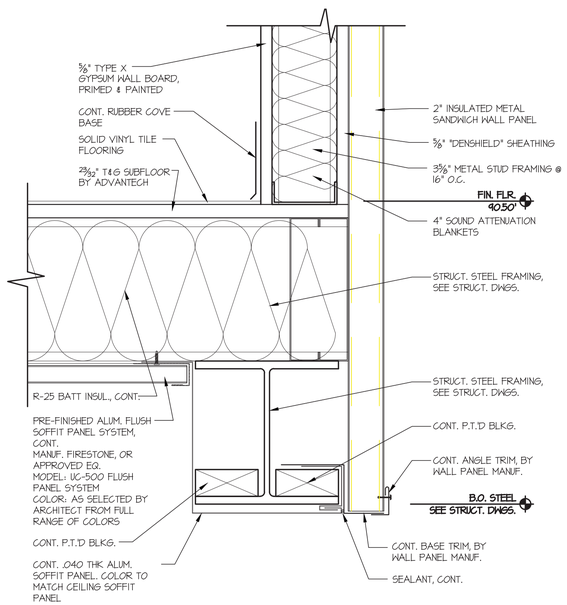


1 BUILDING SECTION

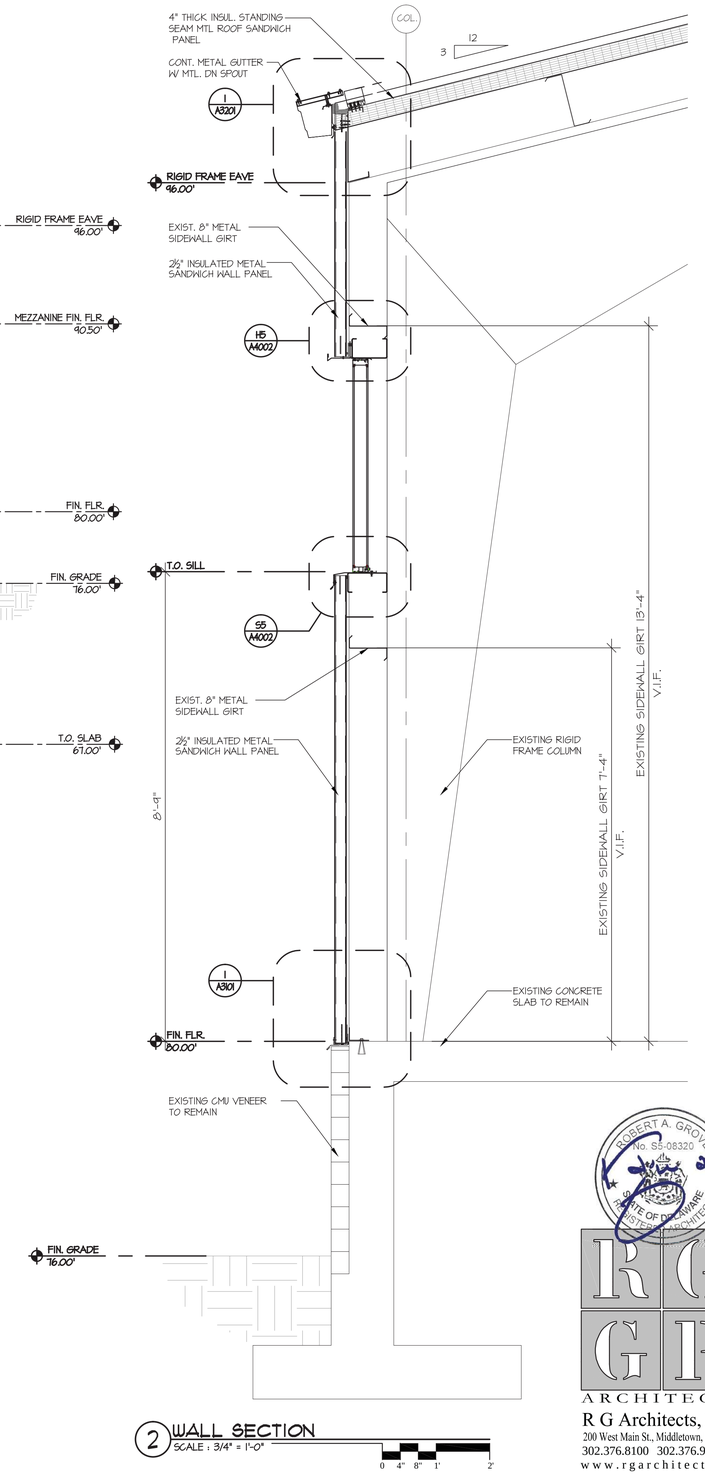
SCALE : 1/4" = 1'-0"

0 1' 2' 4' 8'



3 DETAIL

SCALE : 3" = 1'-0"



2 WALL SECTION

SCALE : 3/4" = 1'-0"

0 4" 8" 1' 2'

0 1' 2' 4' 8'

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CURTIS WATER TREATMENT PLANT
IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

SECTIONS

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
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SHEET 13 OF 54

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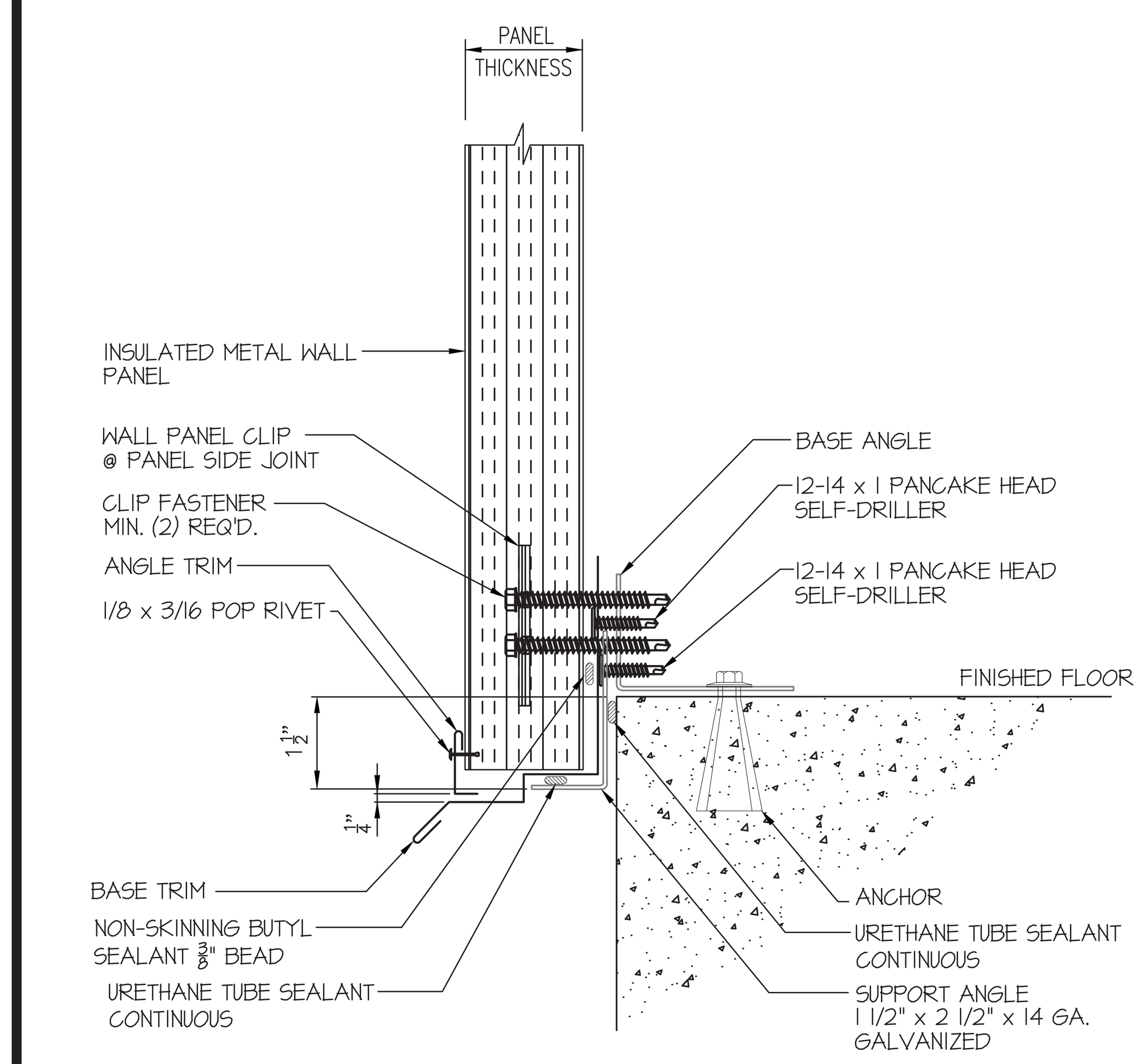
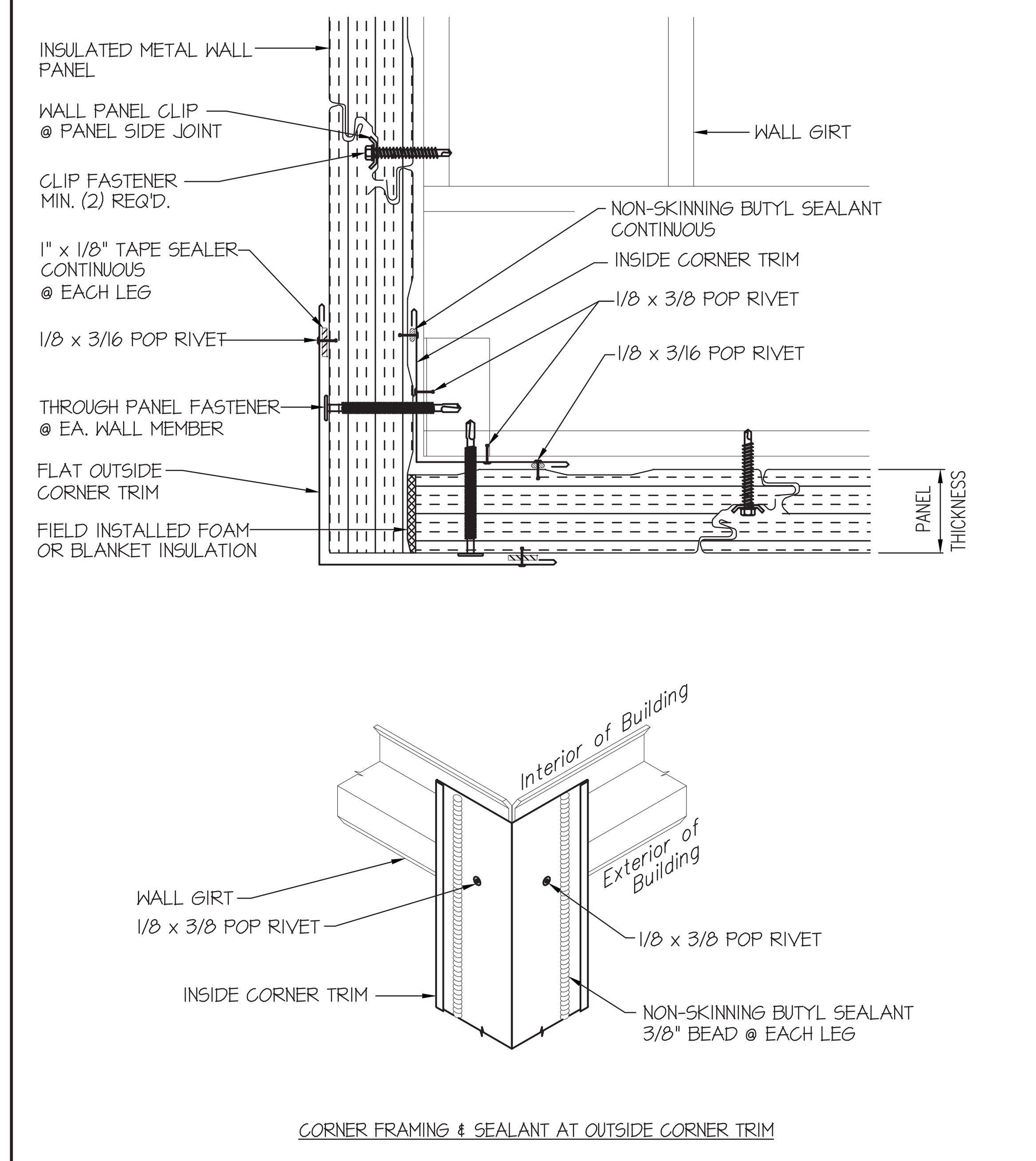
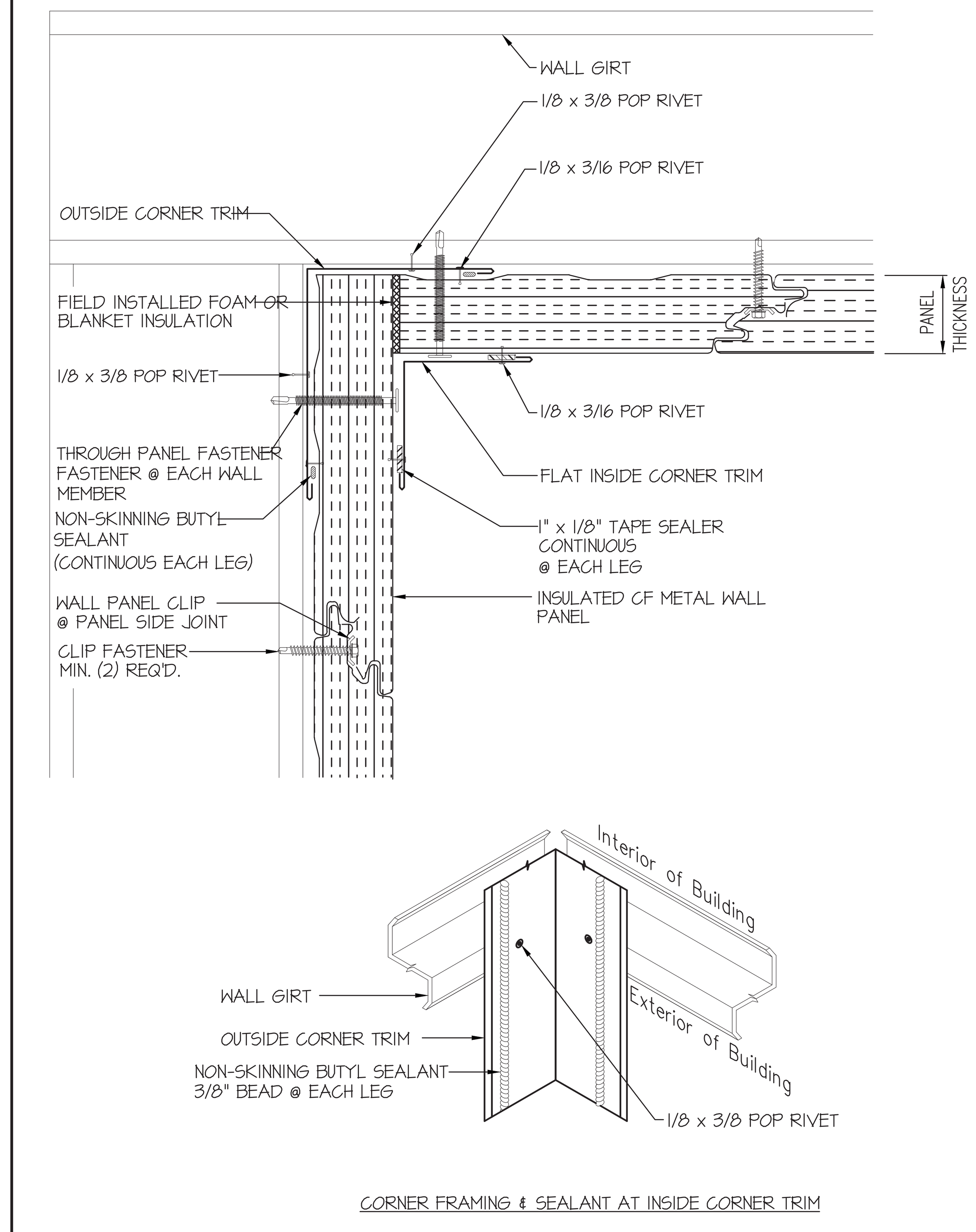


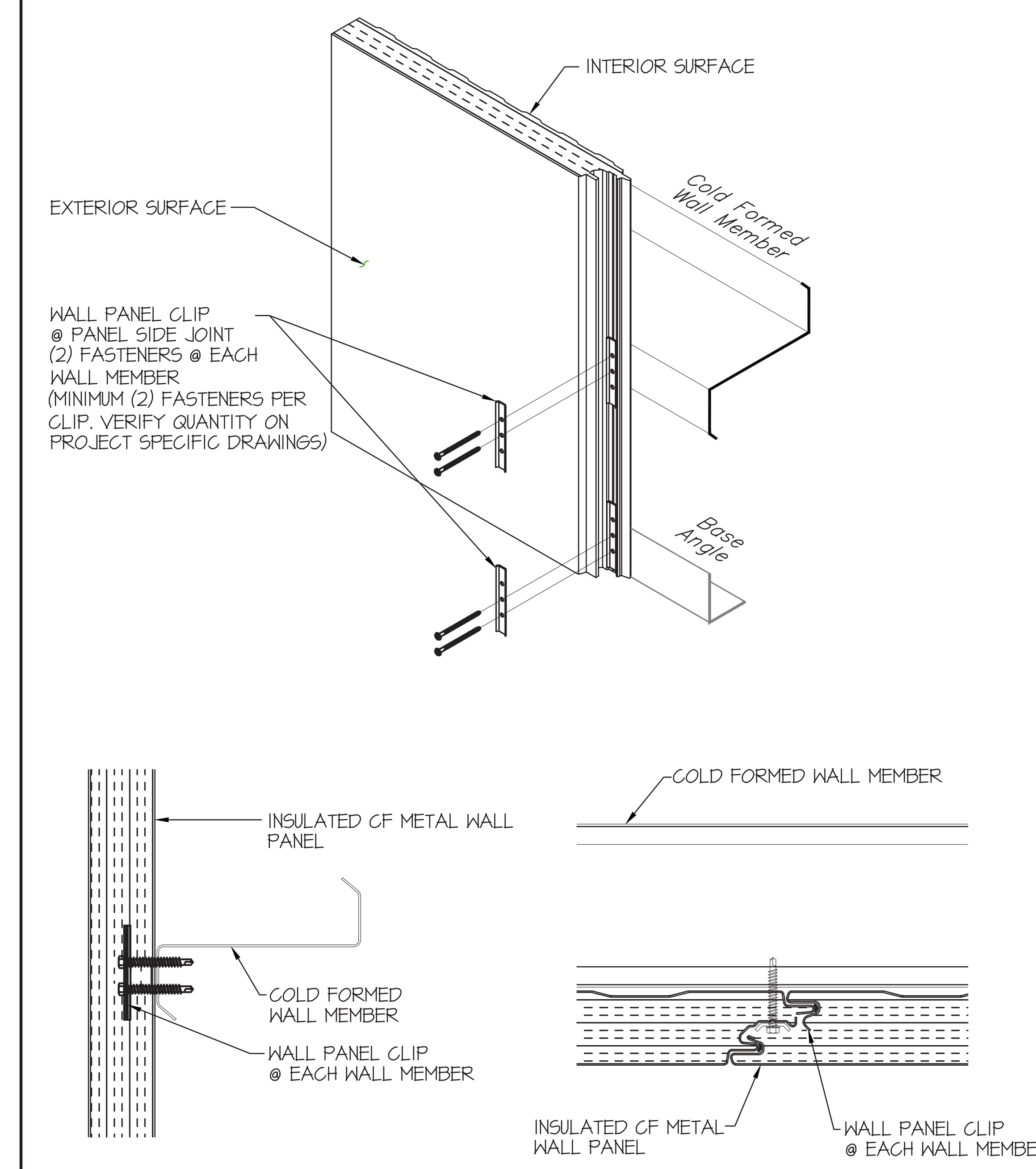
1 WALL PANEL @ BASE DETAIL
SCALE : N.T.S.



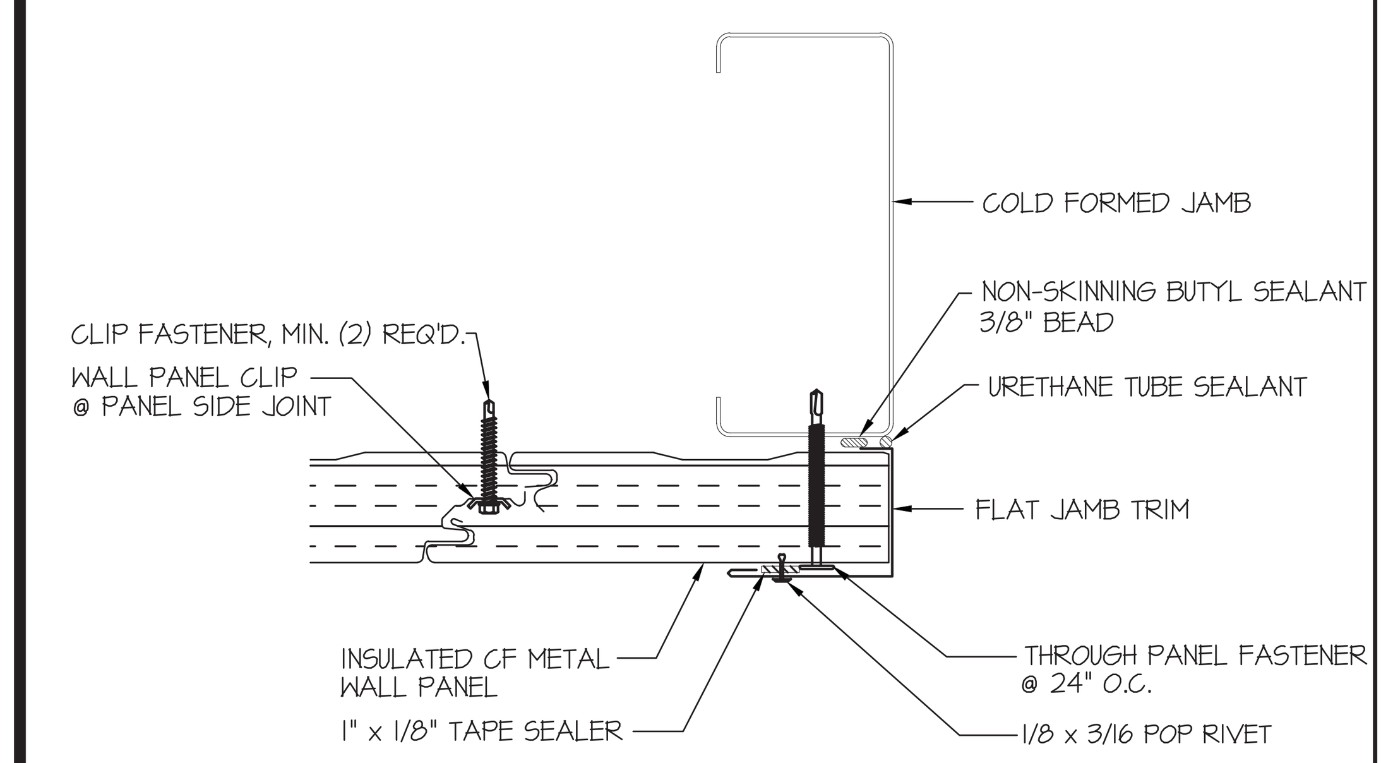
2 WALL PANEL @ OUTSIDE CORNER DETAIL
SCALE : N.T.S.



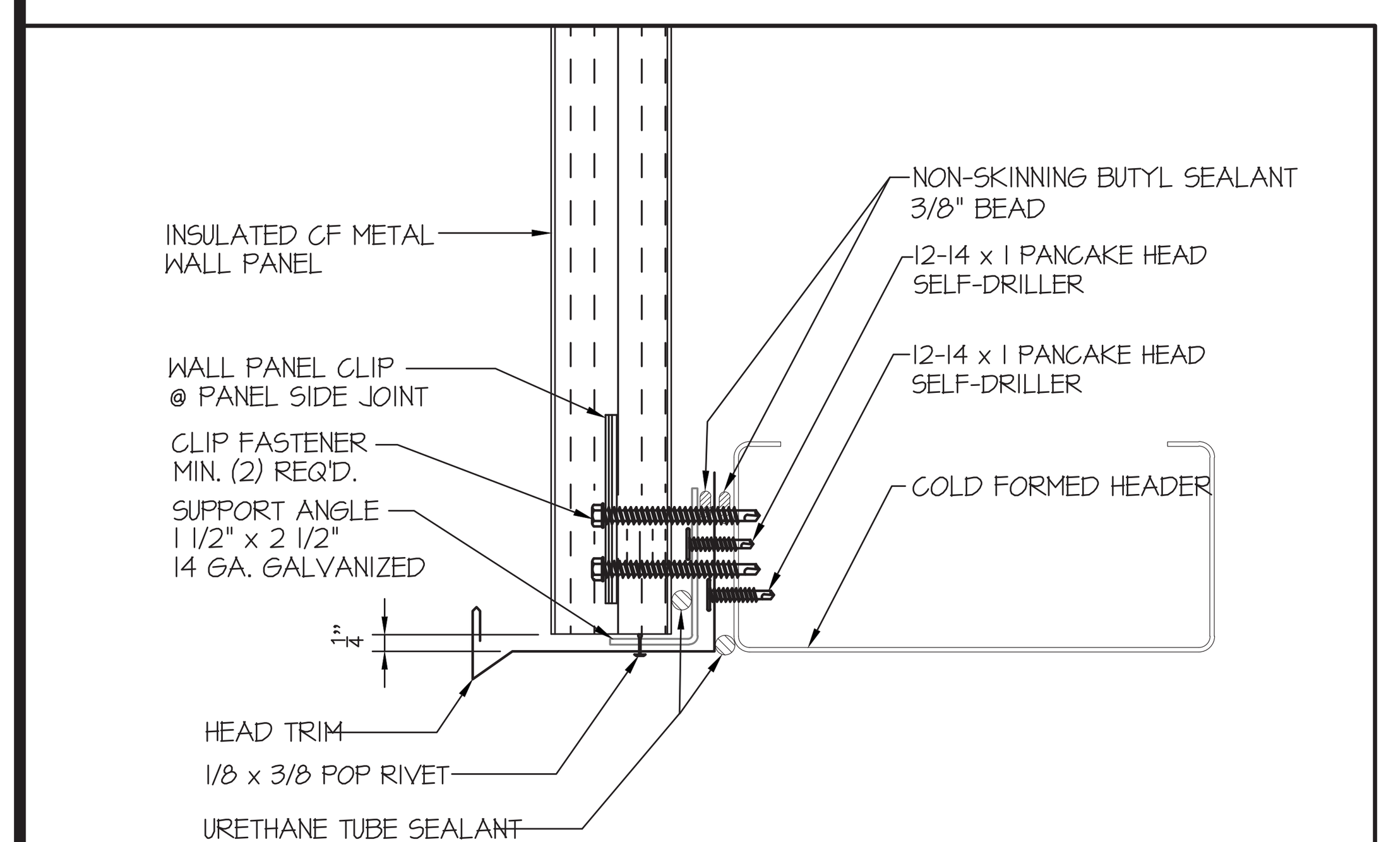
3 WALL PANEL @ INSIDE CORNER DETAIL
SCALE : N.T.S.



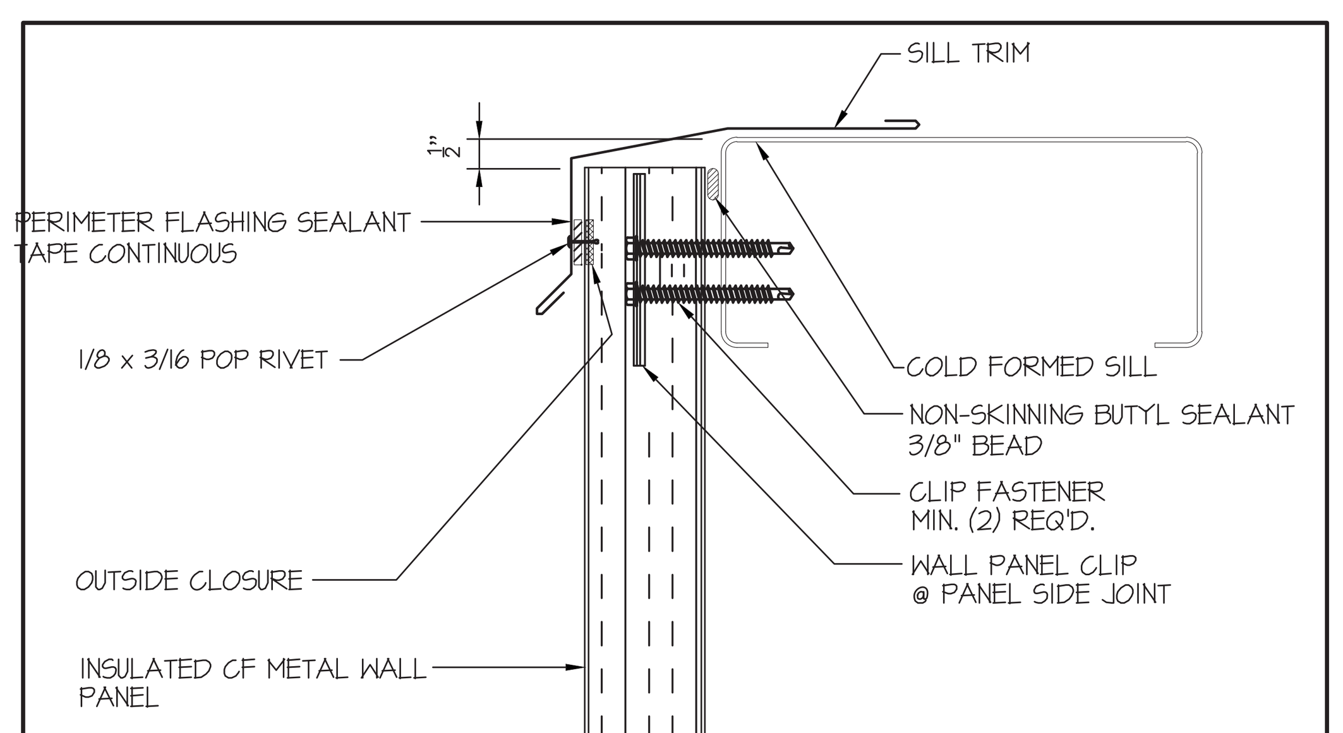
4 WALL PANEL @ CLIP ATTACHMENT DETAIL
SCALE : N.T.S.



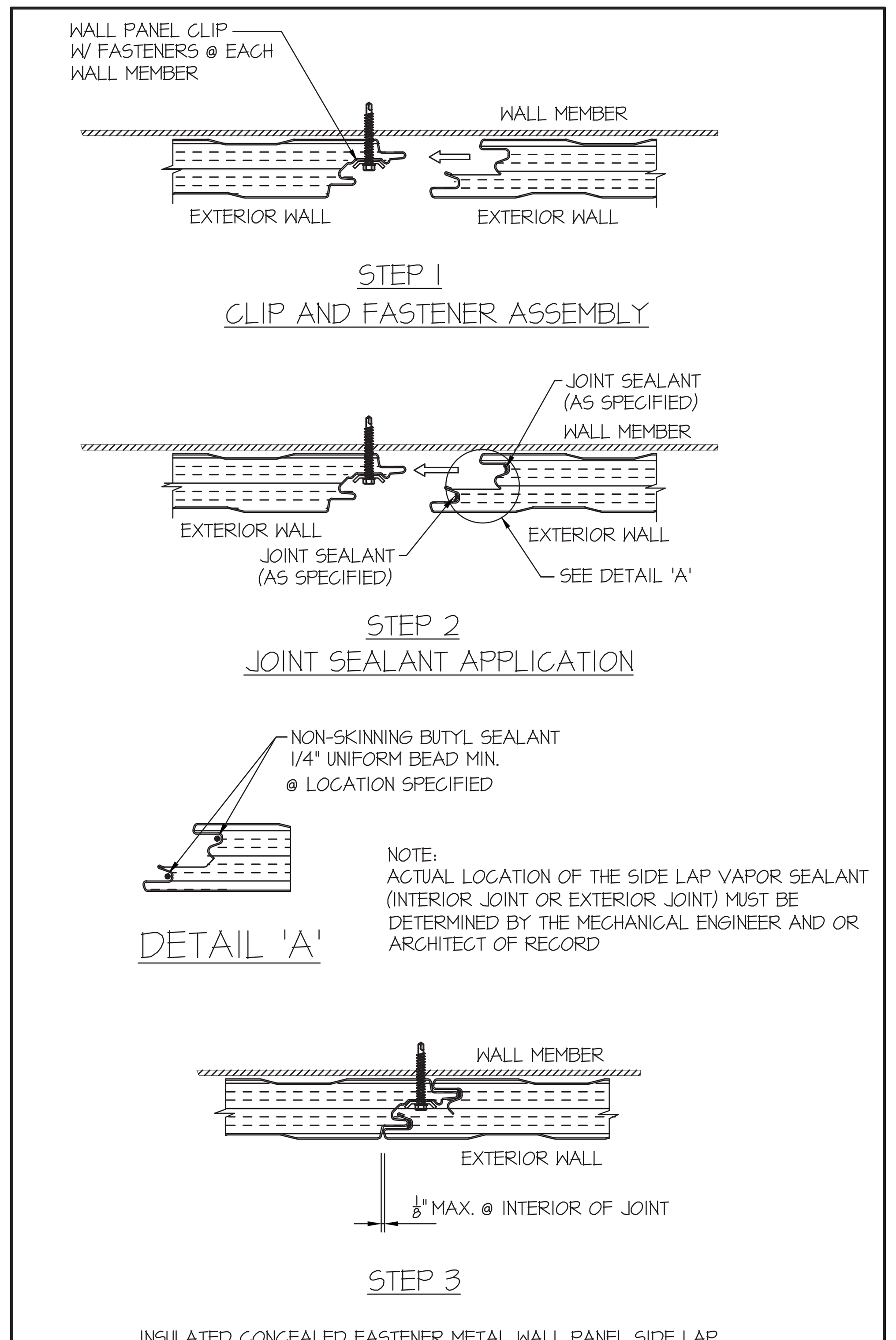
5 WALL PANEL @ JAMB DETAIL
SCALE : N.T.S.



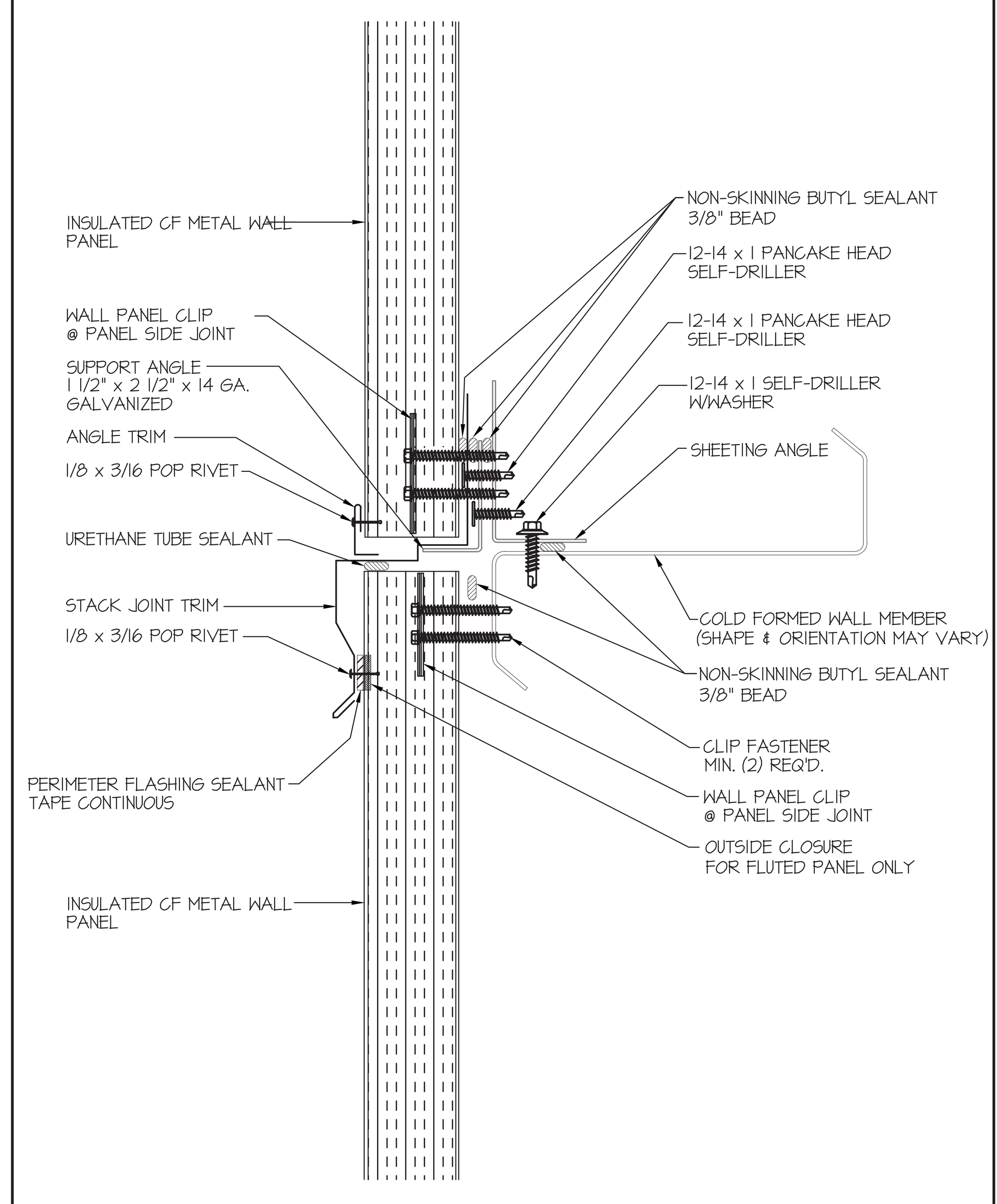
6 WALL PANEL @ HEAD DETAIL
SCALE : N.T.S.



7 WALL PANEL @ SILL DETAIL
SCALE : N.T.S.



8 WALL PANEL @ SIDE LAP DETAIL
SCALE : N.T.S.



9 WALL PANEL @ STACK JOINT DETAIL
SCALE : N.T.S.

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0 1' 2' 4' 8'

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

WALL PANEL DETAILS

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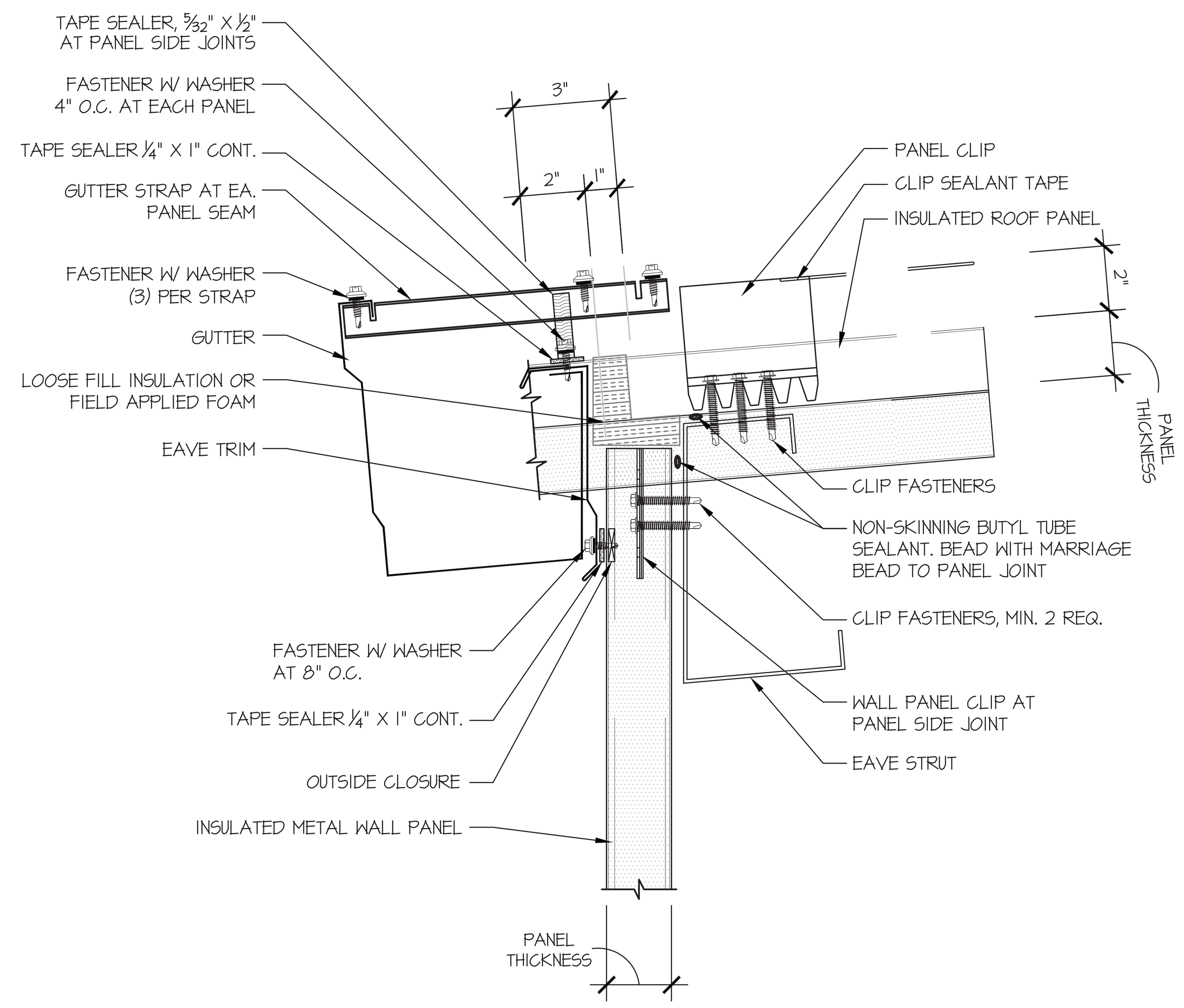
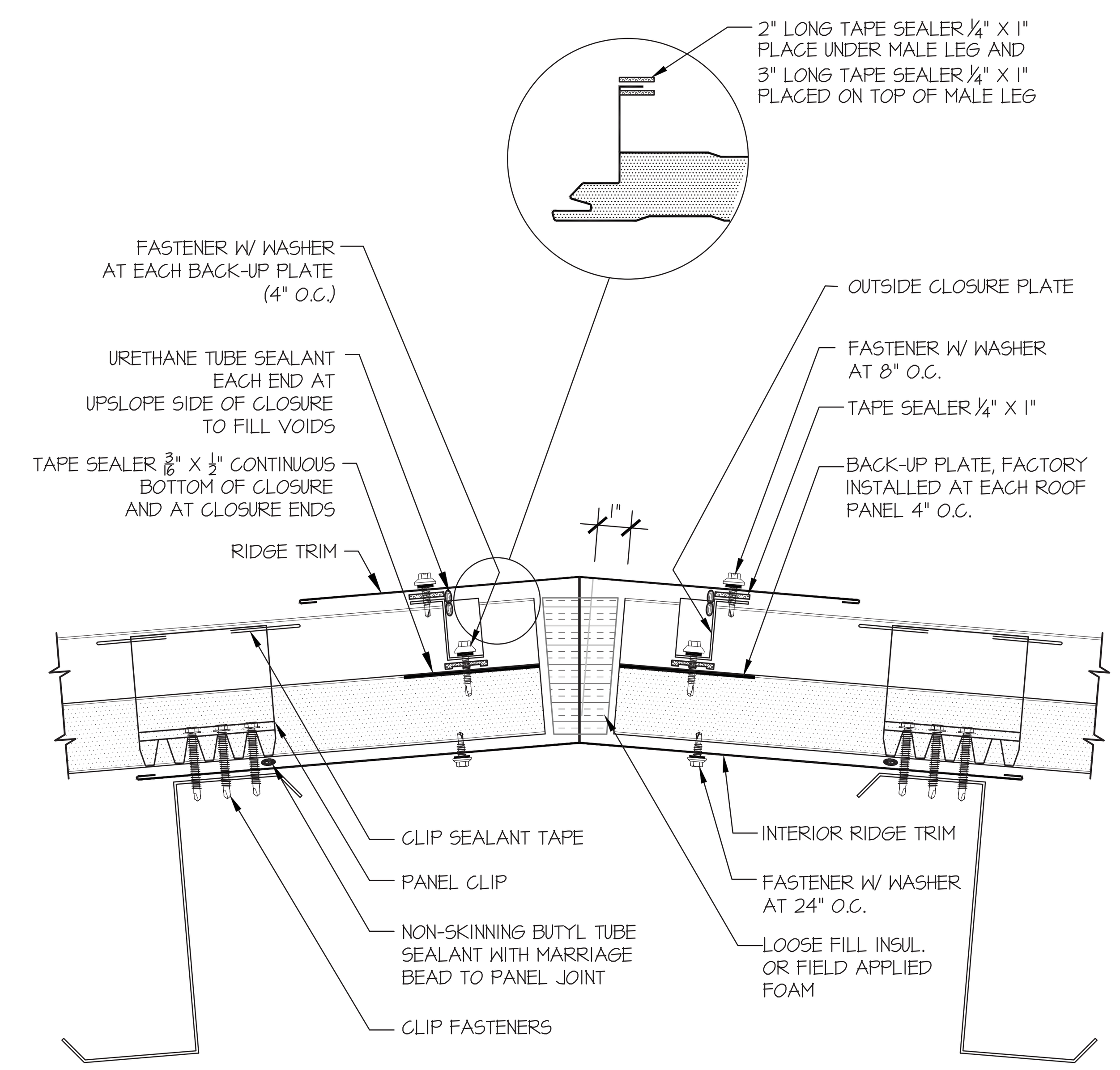
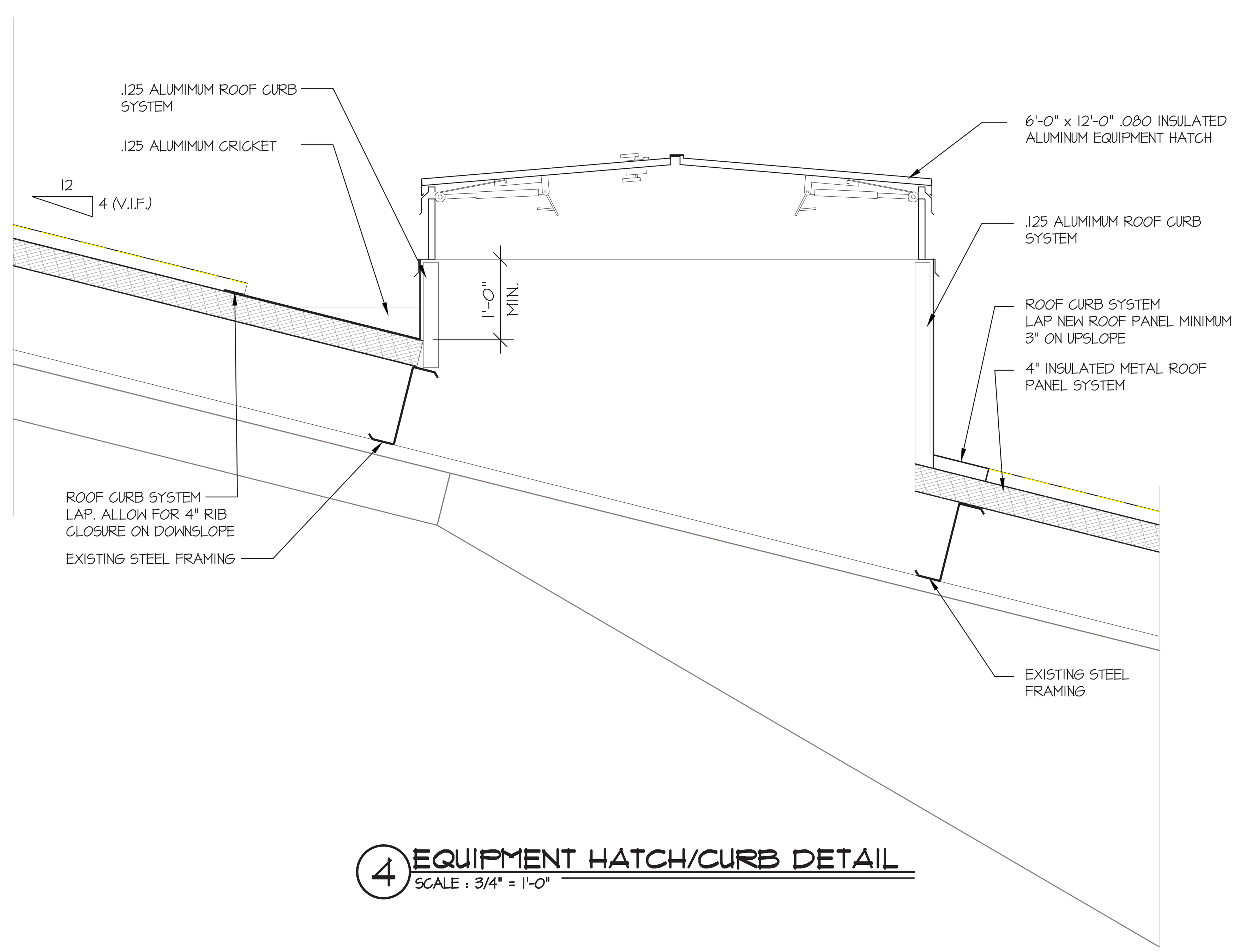


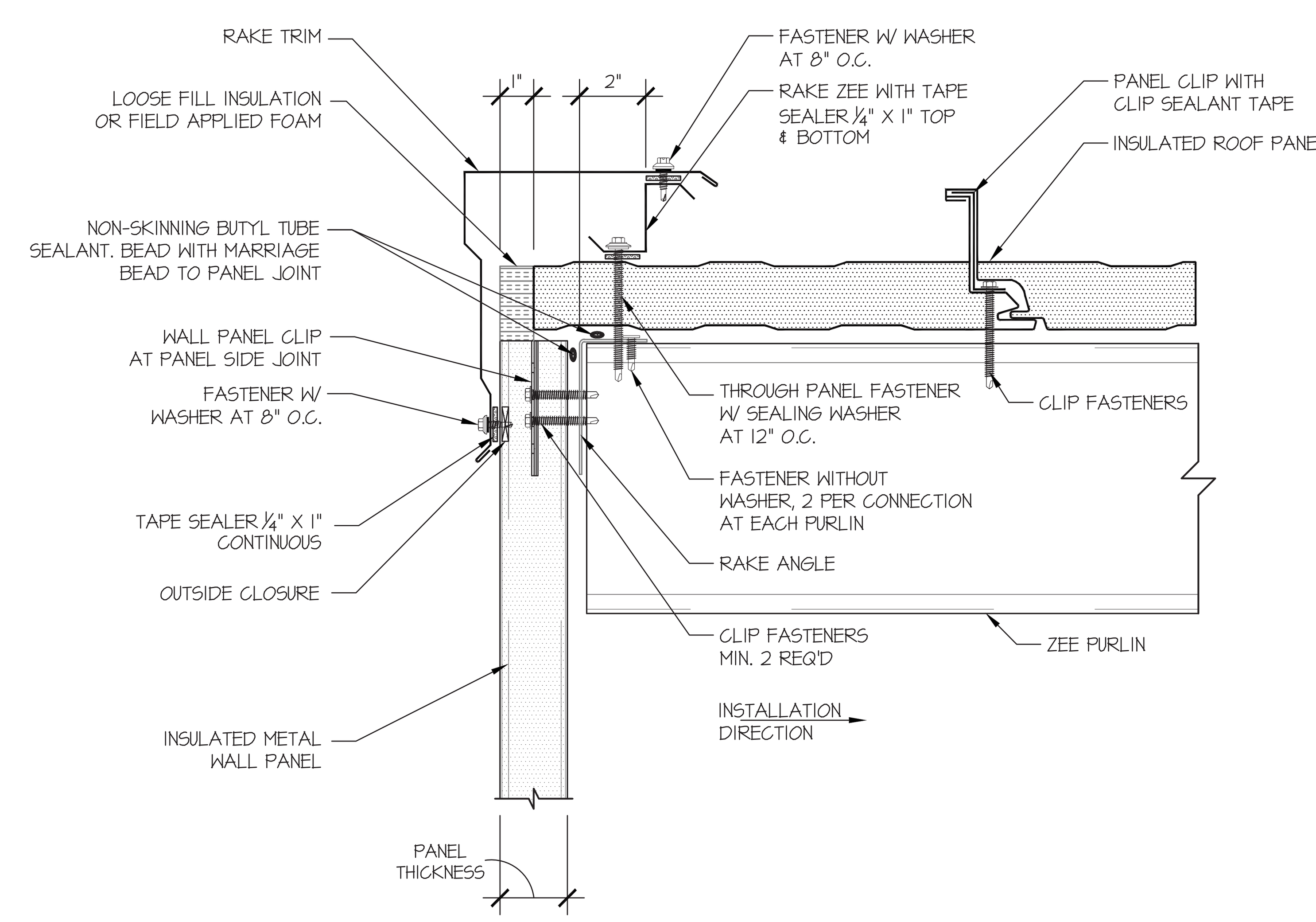
1 ROOF PANEL @ EAVE WITH GUTTER DETAIL
SCALE : N.T.S.



2 ROOF PANEL @ RIDGE DETAIL
SCALE : N.T.S.



4 EQUIPMENT HATCH/CURB DETAIL
SCALE : 3/4" = 1'-0"



3 ROOF PANEL @ STANDARD RAKE DETAIL
SCALE : N.T.S.

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ROBERT A. GROVE
No. SS-08320
STATE OF DELAWARE
REGISTERED ARCHITECT

0 1' 2' 4' 8'

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

Pennoni 50
PENNONI ASSOCIATES INC.
Christiana Executive Campus
121 Continental Drive, Suite 207
Newark, DE 19713-4310
T 302.655.4451 F 302.654.2895

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

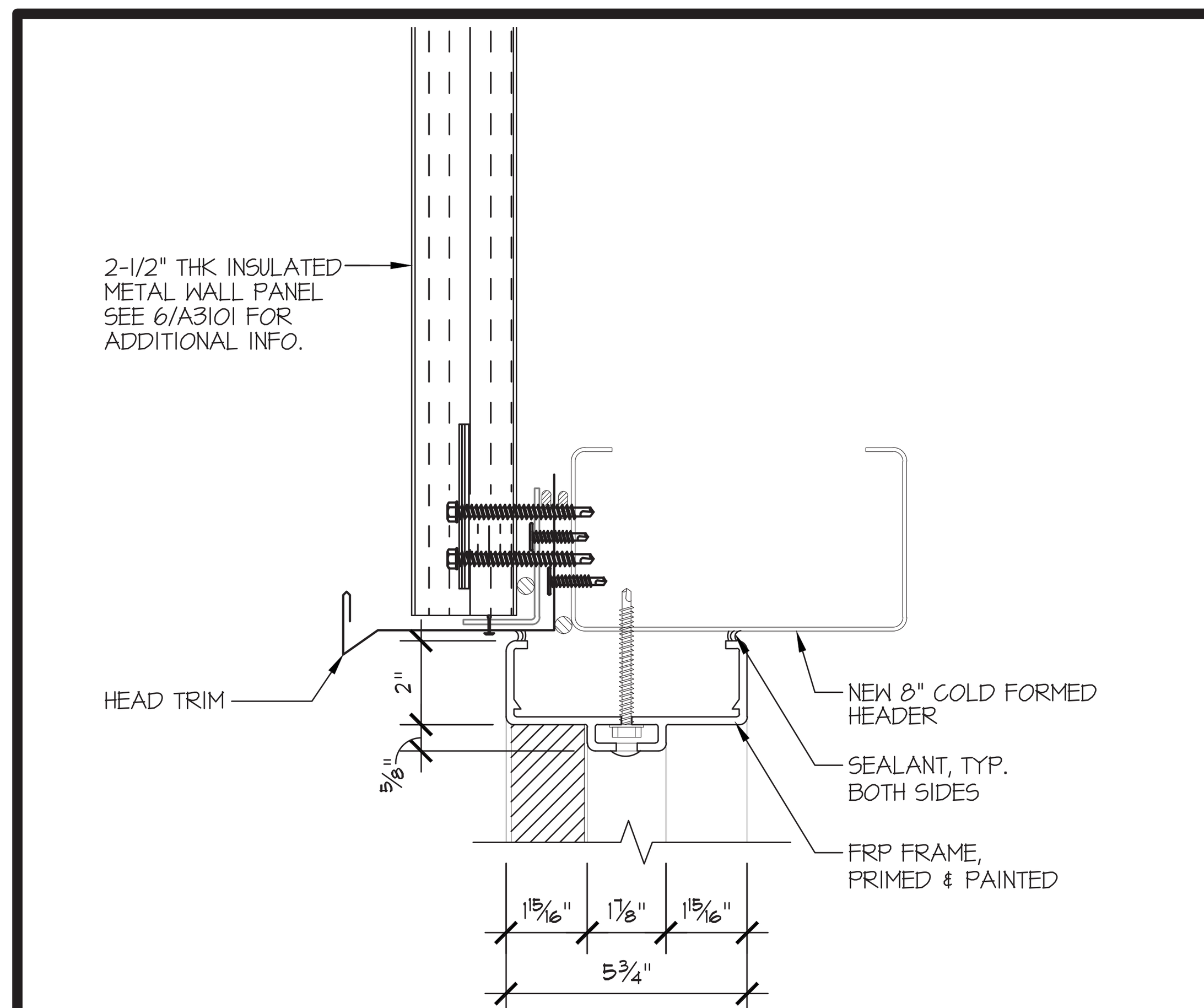
ROOF PANEL DETAILS

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

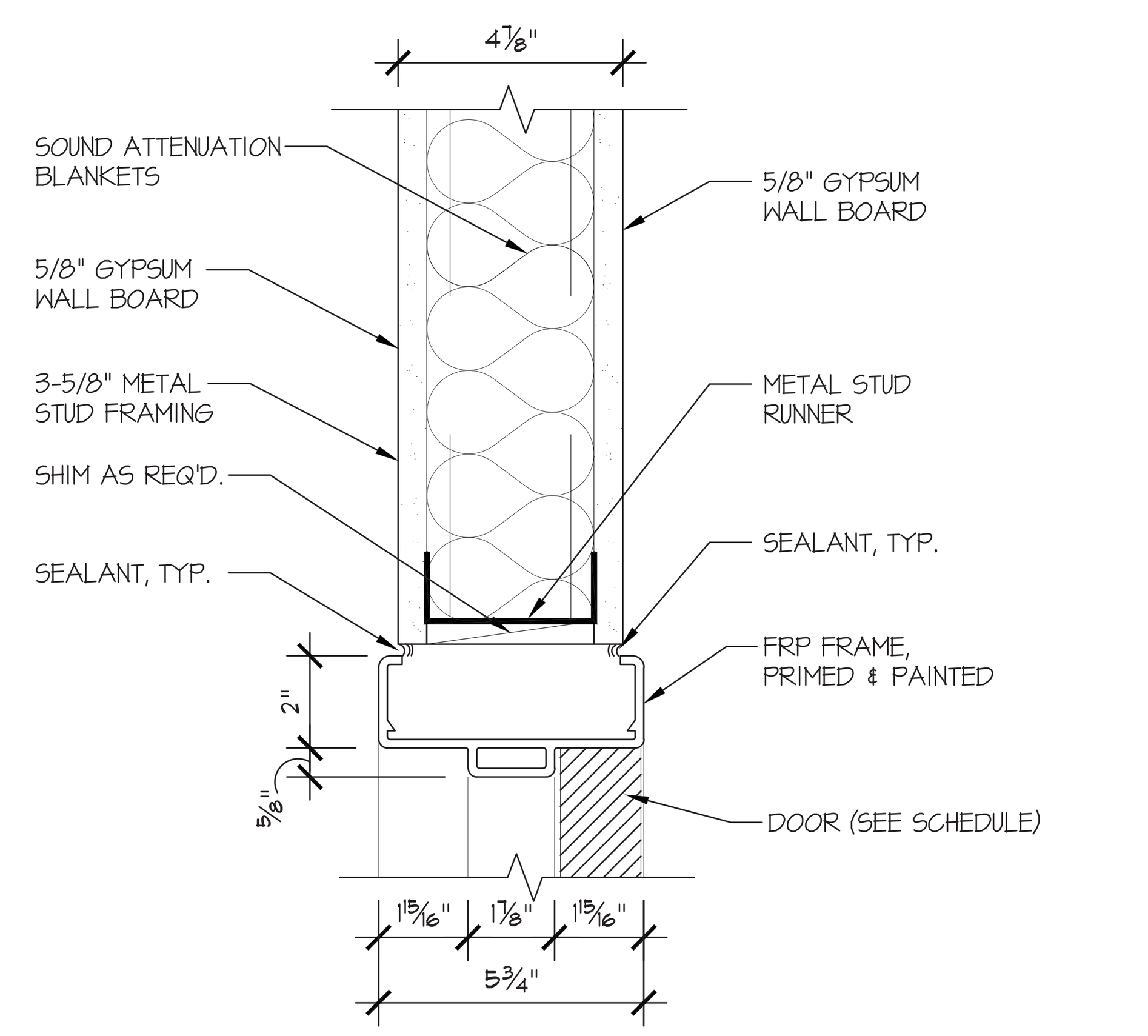
DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	RG ARCHITECTS
APPROVED BY	RG ARCHITECTS

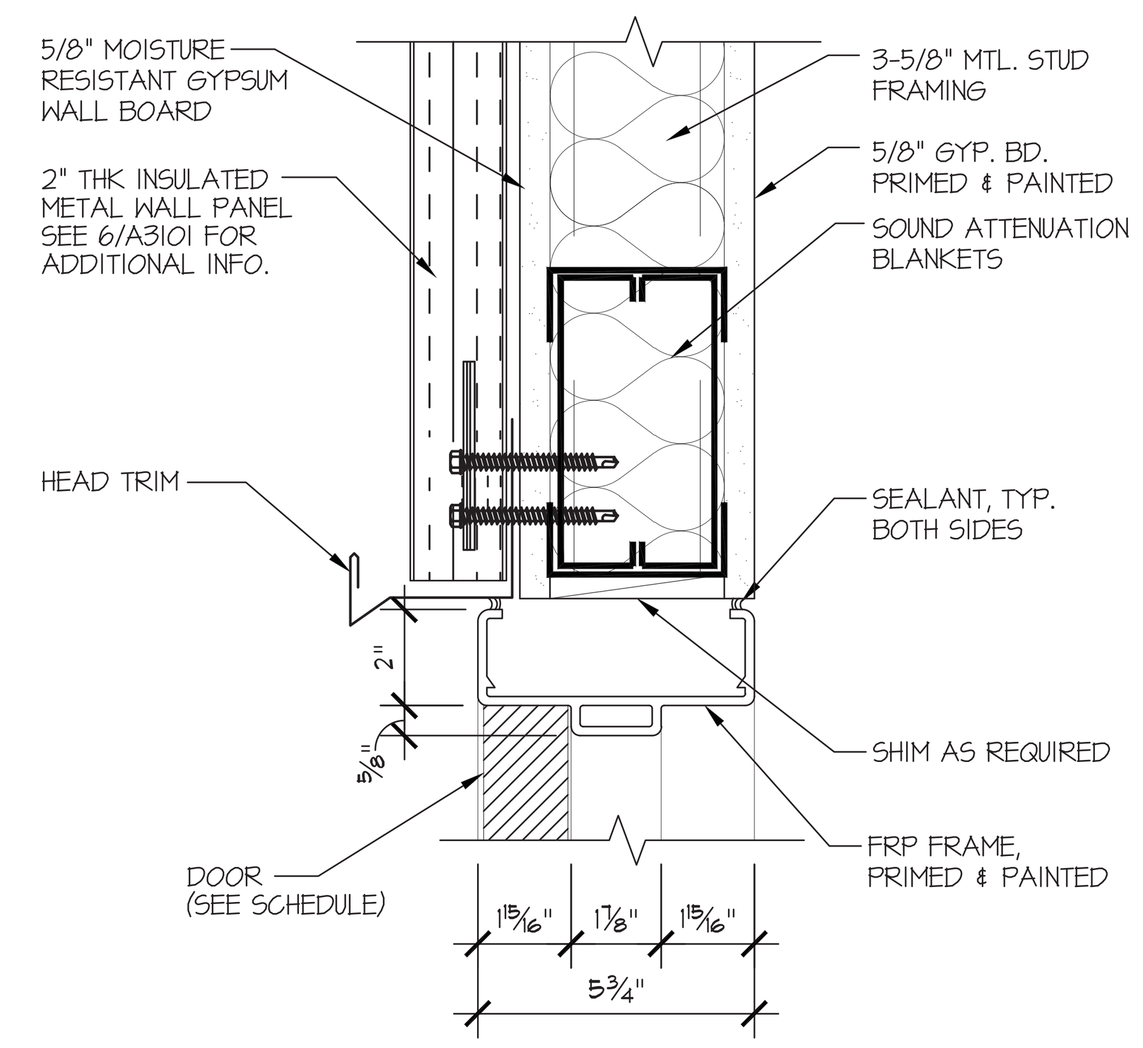
A3201



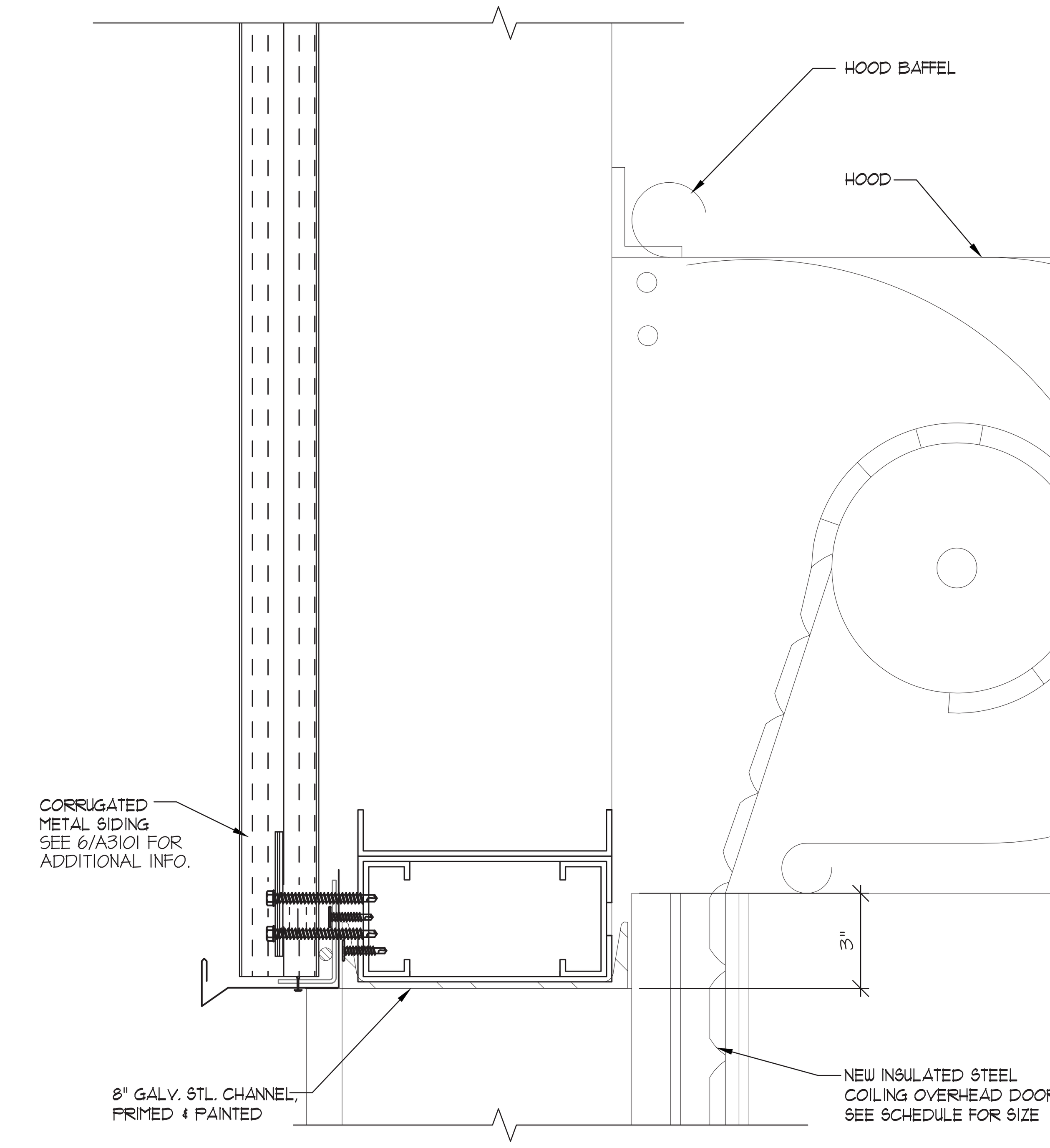
H1 HEAD DETAIL
SCALE : 3" = 1'-0"



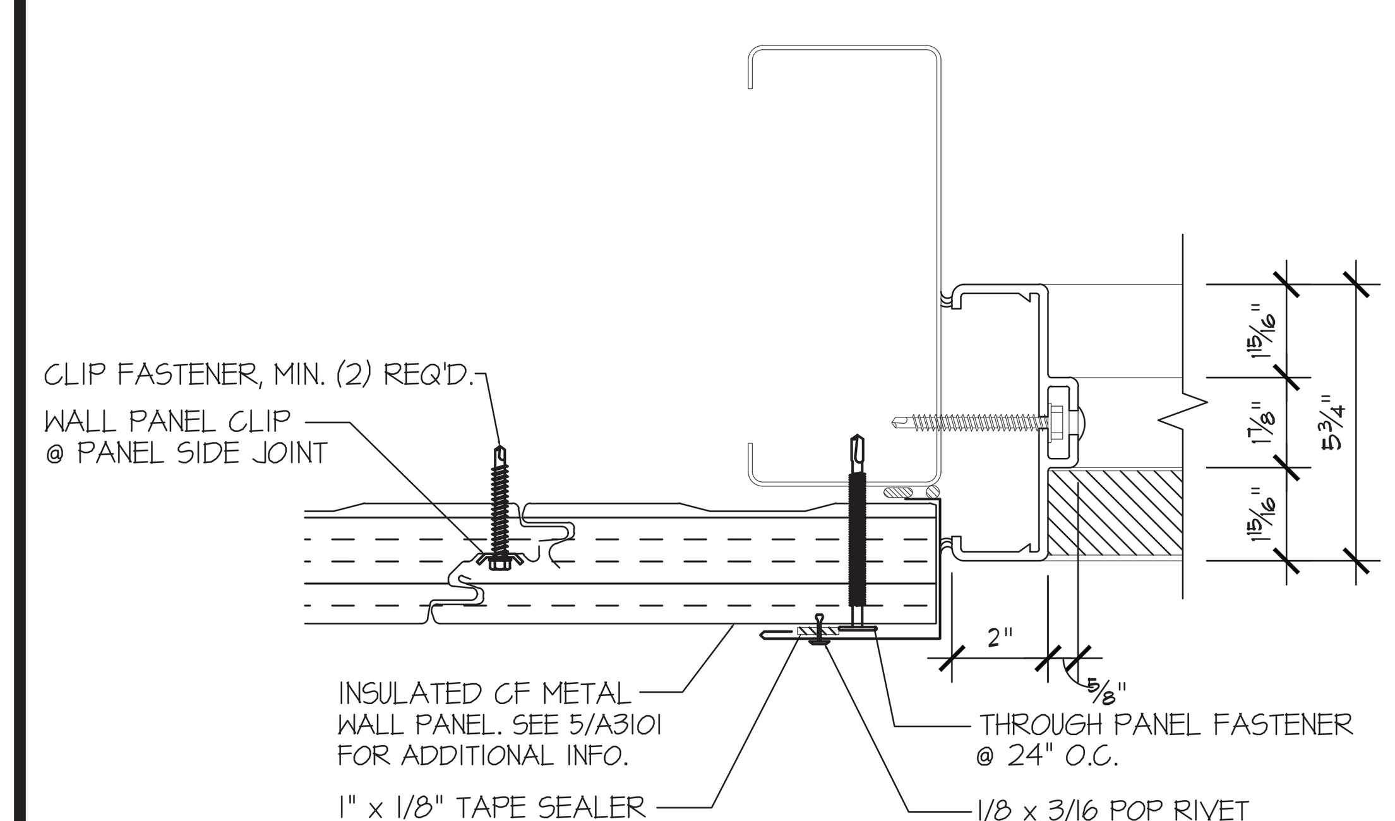
H2 HEAD DETAIL
SCALE : 3" = 1'-0"



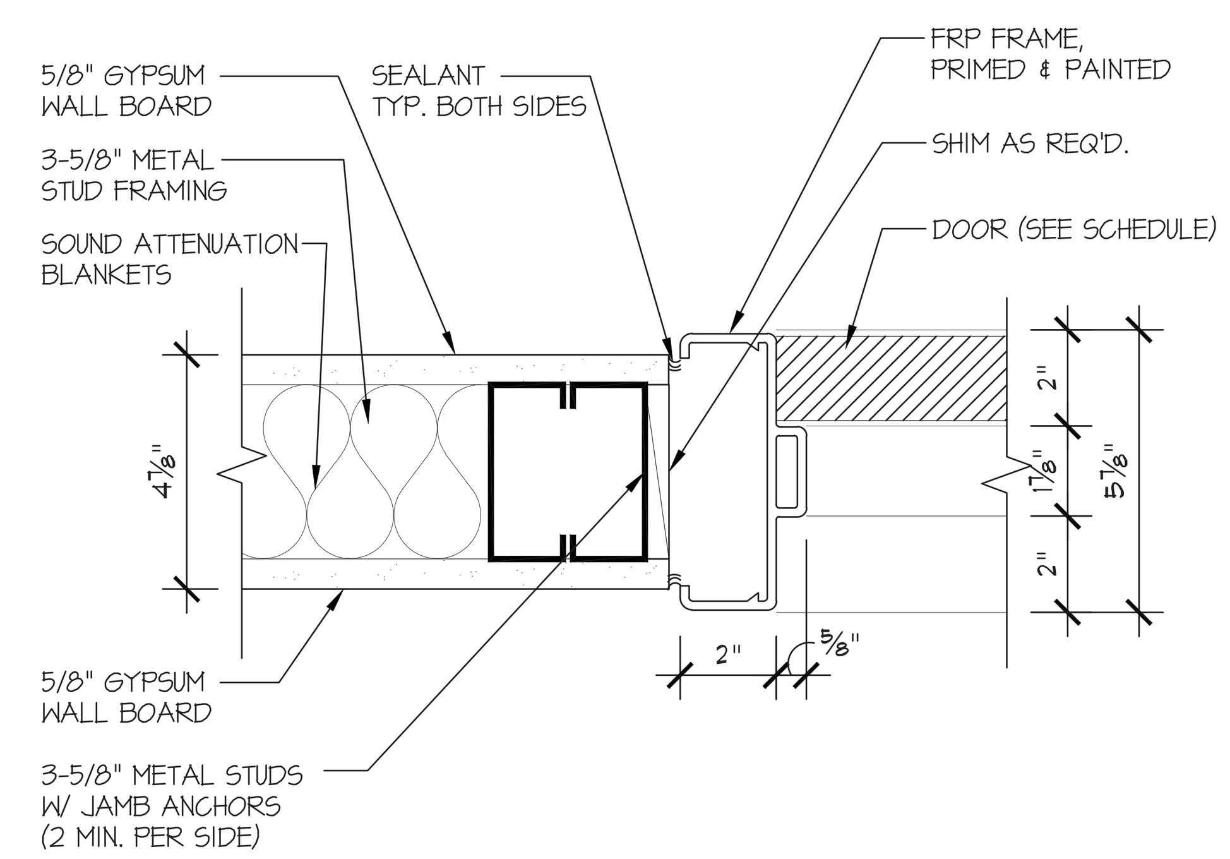
H3 HEAD DETAIL
SCALE : 3" = 1'-0"



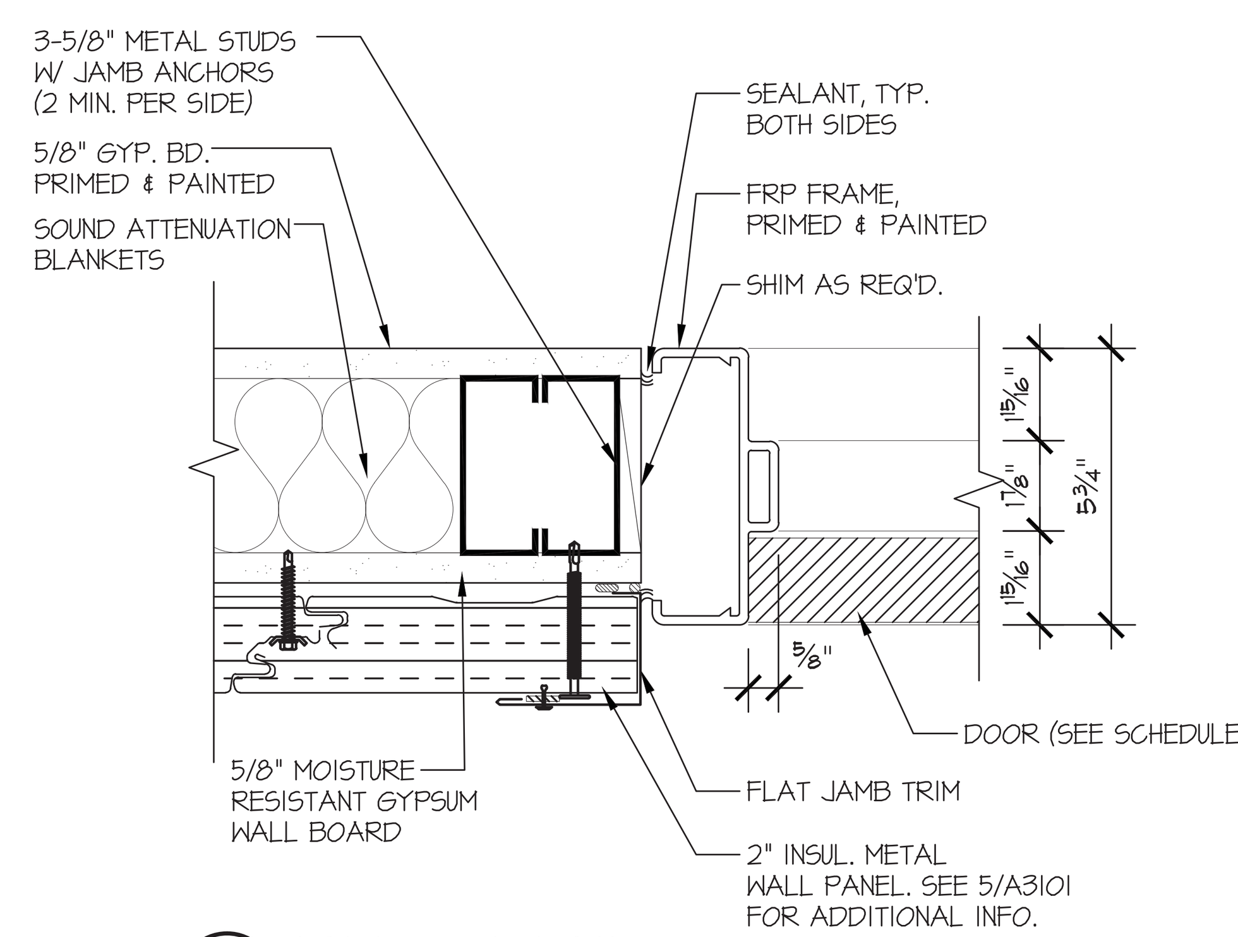
H6 HEAD DETAIL
SCALE : 3" = 1'-0"



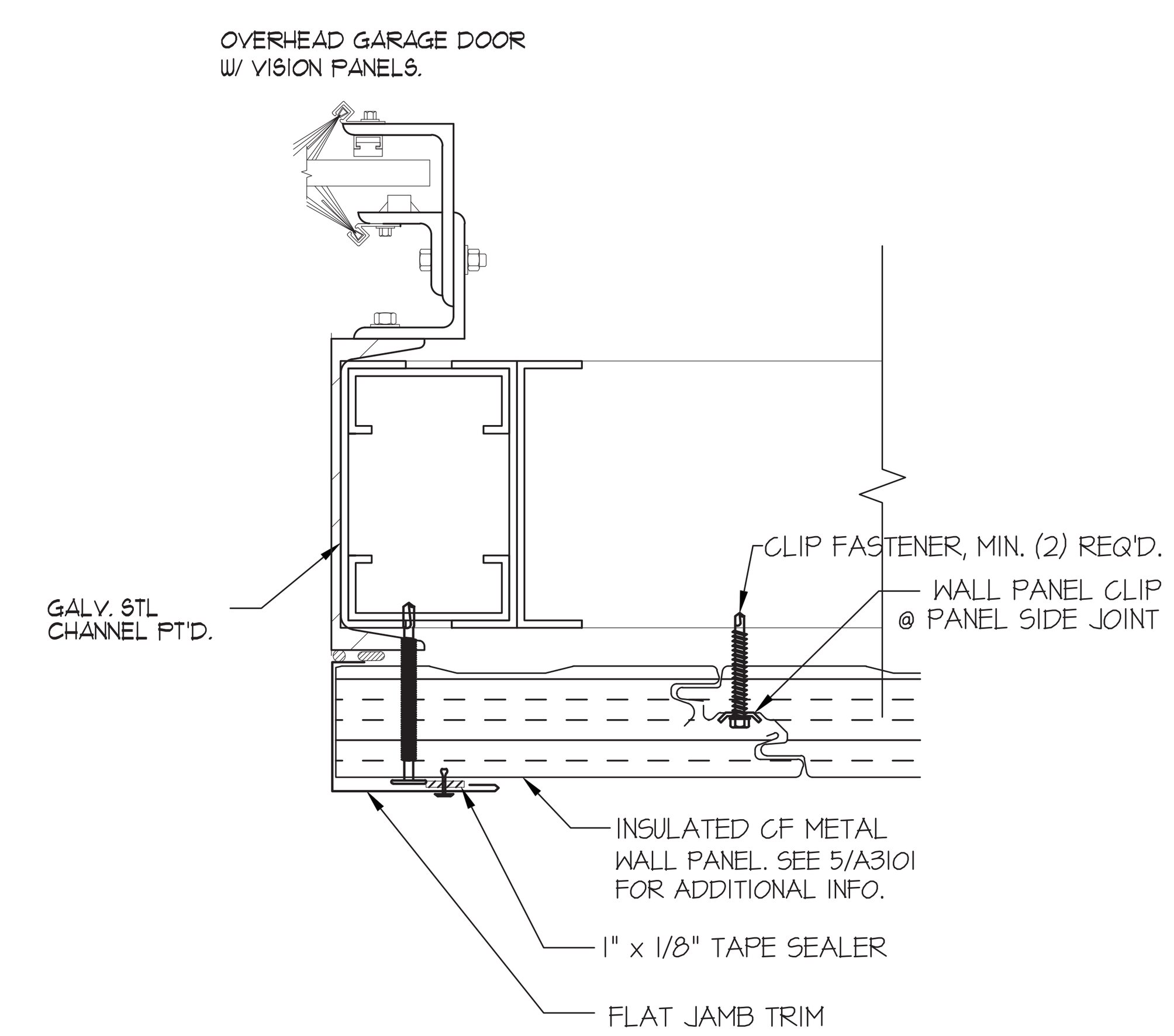
J1 JAMB DETAIL
SCALE : 3" = 1'-0"



J2 JAMB DETAIL
SCALE : 3" = 1'-0"



J3 JAMB DETAIL
SCALE : 3" = 1'-0"



J6 JAMB DETAIL
SCALE : 3" = 1'-0"

DOOR SCHEDULE

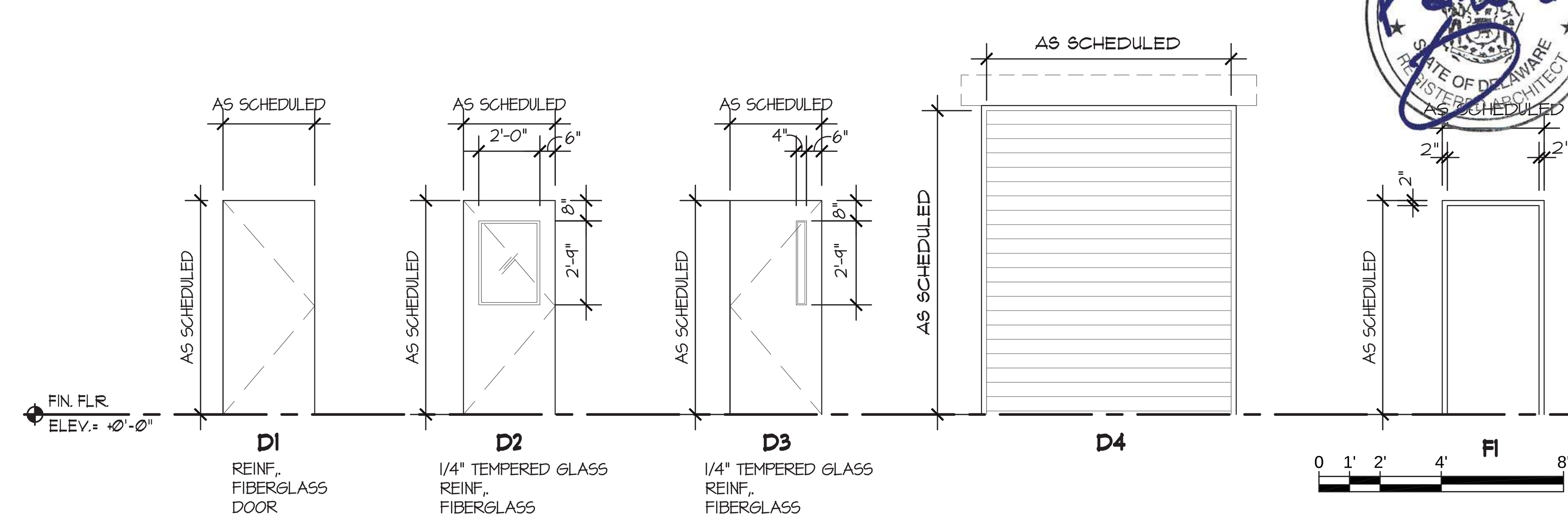
EXTERIOR DOOR	ACCESS CONTROL	HARDWARE SET	MARK	SIZE: WIDTH X HEIGHT	SIZE: THK.	TYPE: DOOR TYPE	TYPE: MTL.	TYPE: FRAME TYPE	TYPE: MTL.	DETAILS: H	DETAILS: J	DETAILS: S	FIRE RATING IN MINUTES	REMARKS
●		1	100	(2) 4'-0" x 10'-0"	1 3/4"	D1	FRP	F1	FRP	H1	J1	-	-	MONORAIL CUTOUT
●	●	2	101	3'-0" x 7'-0"	1 3/4"	D3	FRP	F1	FRP	H1	J1	-	-	-
		5	102	3'-0" x 7'-0"	1 3/4"	D1	FRP	F1	FRP	H3	J3	-	-	-
		5	103	3'-0" x 7'-0"	1 3/4"	D3	FRP	F1	FRP	H3	J3	-	-	-
●	●	2	104	3'-0" x 7'-0"	1 3/4"	D3	FRP	F1	FRP	H1	J1	-	-	-
●		-	105	10'-0" x 12'-0"	1 3/4"	D4	STL	F-	STL	H6	J6	-	-	ELECTRICALLY OPERATED ROLL-UP
●		-	106	10'-0" x 12'-0"	1 3/4"	D4	STL	F-	STL	H6	J6	-	-	ELECTRICALLY OPERATED ROLL-UP
●	●	2	200	3'-0" x 7'-0"	1 3/4"	D2	FRP	F1	FRP	H1	J1	-	-	-
		4	201	3'-0" x 7'-0"	1 3/4"	D2	FRP	F1	FRP	H3	J3	-	-	-
		4	202	3'-0" x 7'-0"	1 3/4"	D2	FRP	F1	FRP	H2	J2	-	-	-
		3	203	3'-0" x 7'-0"	1 3/4"	D1	FRP	F1	FRP	H2	J2	-	-	-

GENERAL NOTES DOORS, FRAMES & HARDWARE

1. INTERIOR DOOR CLOSERS MUST BE SET NO HIGHER THAN 5 POUNDS OF PRESSURE TO OPERATE (TYP. FOR INTERIOR NON-RATED DOORS ONLY)
2. OPENING HARDWARE IS CENTERED A MAXIMUM OF 48" ABOVE FINISH FLOOR.
3. MINIMUM STRIKE SIDE CLEARANCE ON PULL SIDE OF DOOR:
   - A. 24" MIN. EXTERIOR DOORS.
   - B. 18" MIN. INTERIOR DOORS, FRONT APPROACH.
   - C. 36" MIN. INTERIOR DOORS, HINGE APPROACH (IF CORRIDOR IS 60" MINIMUM).
   - D. 42" MIN. INTERIOR DOORS, HINGE APPROACH (IF CORRIDOR IS LESS THAN 60", BUT GREATER THAN 54").
   - E. 24" MIN. INTERIOR DOORS, LATCH APPROACH.
4. MINIMUM STRIKE SIDE CLEARANCE ON PUSH SIDE OF DOOR:
   - A. 0", FRONT APPROACH.
   - B. 12" MIN., FRONT APPROACH W/LATCH AND CLOSER.
   - C. 54" MIN. TOTAL WIDTH, HINGE APPROACH.
   - D. 24" MIN., LATCH APPROACH.
5. DOOR CLOSERS MUST BE SET SO THAT IT TAKES AT LEAST 3 SECONDS TO CLOSE FROM AN OPEN POSITION OF 70° TO WITHIN 3" OF THE LATCH.
6. ALL WIRING CONDUIT IDENTIFIED ON THE DRAWINGS, OR REQUIRED FOR THE INSTALLATION OF ELECTRONIC COMPONENTS, THAT IS WITHIN HOLLOW METAL FRAMES SHALL BE PROVIDED AS PART OF THE HOLLOW METAL FRAME, WITH TERMINATIONS APPROPRIATE FOR EXTENSION BY OTHER TRADES. G.C. COORD.
7. SEE SPECIFICATIONS FOR DOOR HARDWARE SETS, TYP.

KEY:

ALUM	ALUMINUM
HM	HOLLOW METAL
WD	WOOD
FRP	FIBERGLASS REINFORCED PANEL
STL	STAINLESS STEEL



FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

ROBERT A. GROVE No. S5-08320 STATE OF DELAWARE REGISTERED ARCHITECT

NEWARK DELAWARE
Committed to Service Excellence

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

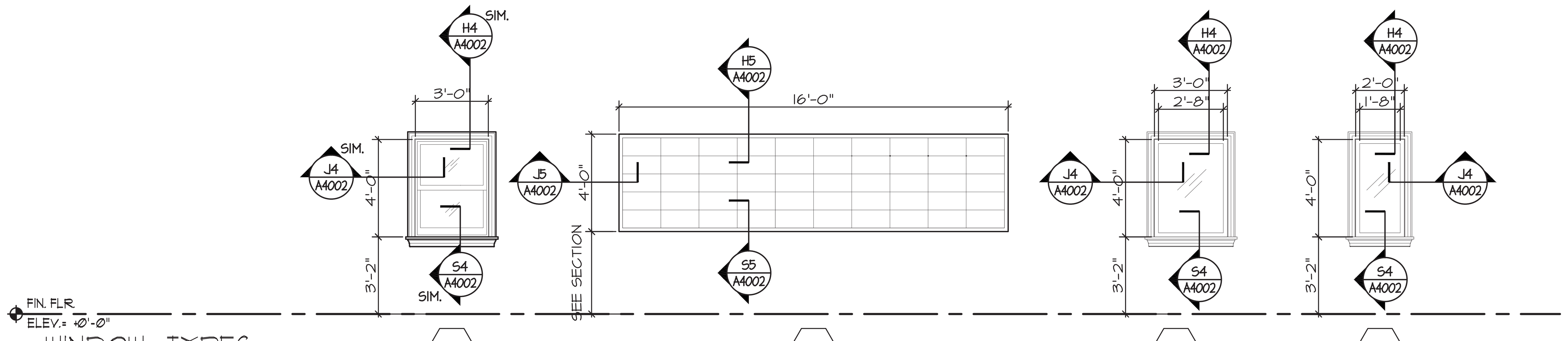
WINDOW & DOOR DETAILS

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	RG ARCHITECTS
APPROVED BY	RG ARCHITECTS

A4001



WINDOW TYPES

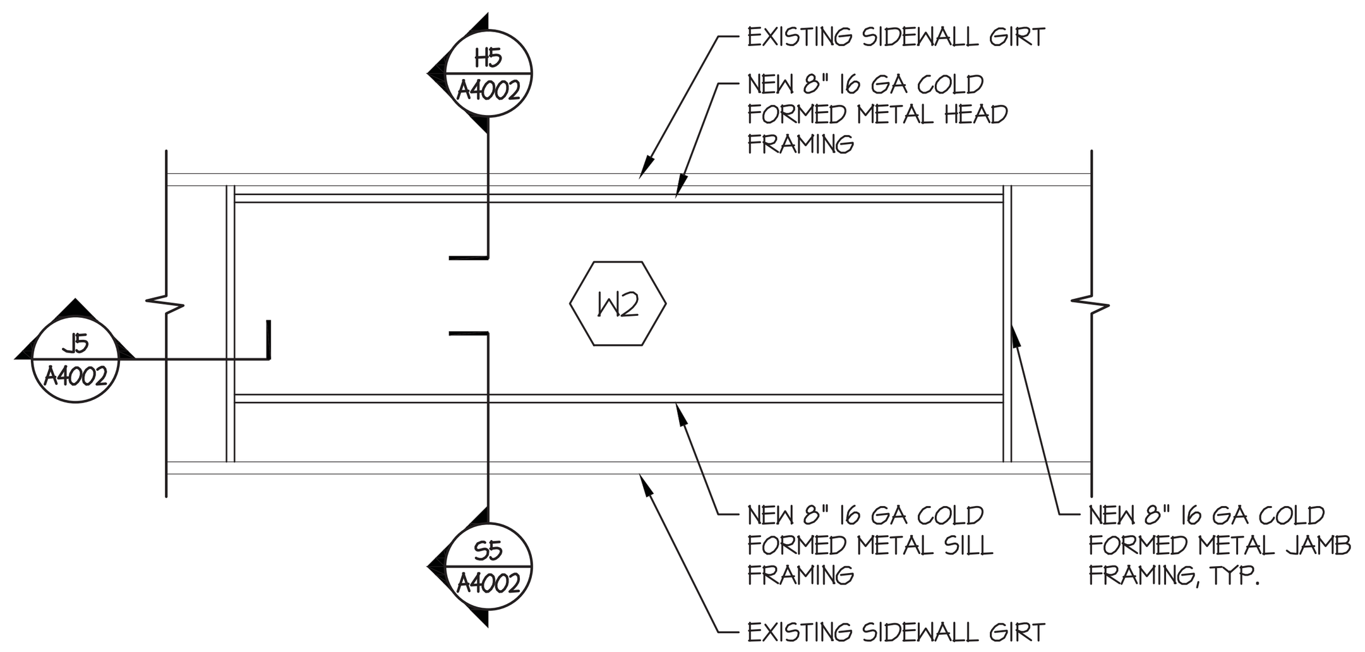
GENERAL NOTE:
CONTRACTOR SHALL VERIFY ALL WINDOW UNIT ROUGH OPENING REQUIREMENTS PRIOR TO ORDERING AND INSTALLING WINDOW UNITS

W1 TEMPERED GLASS

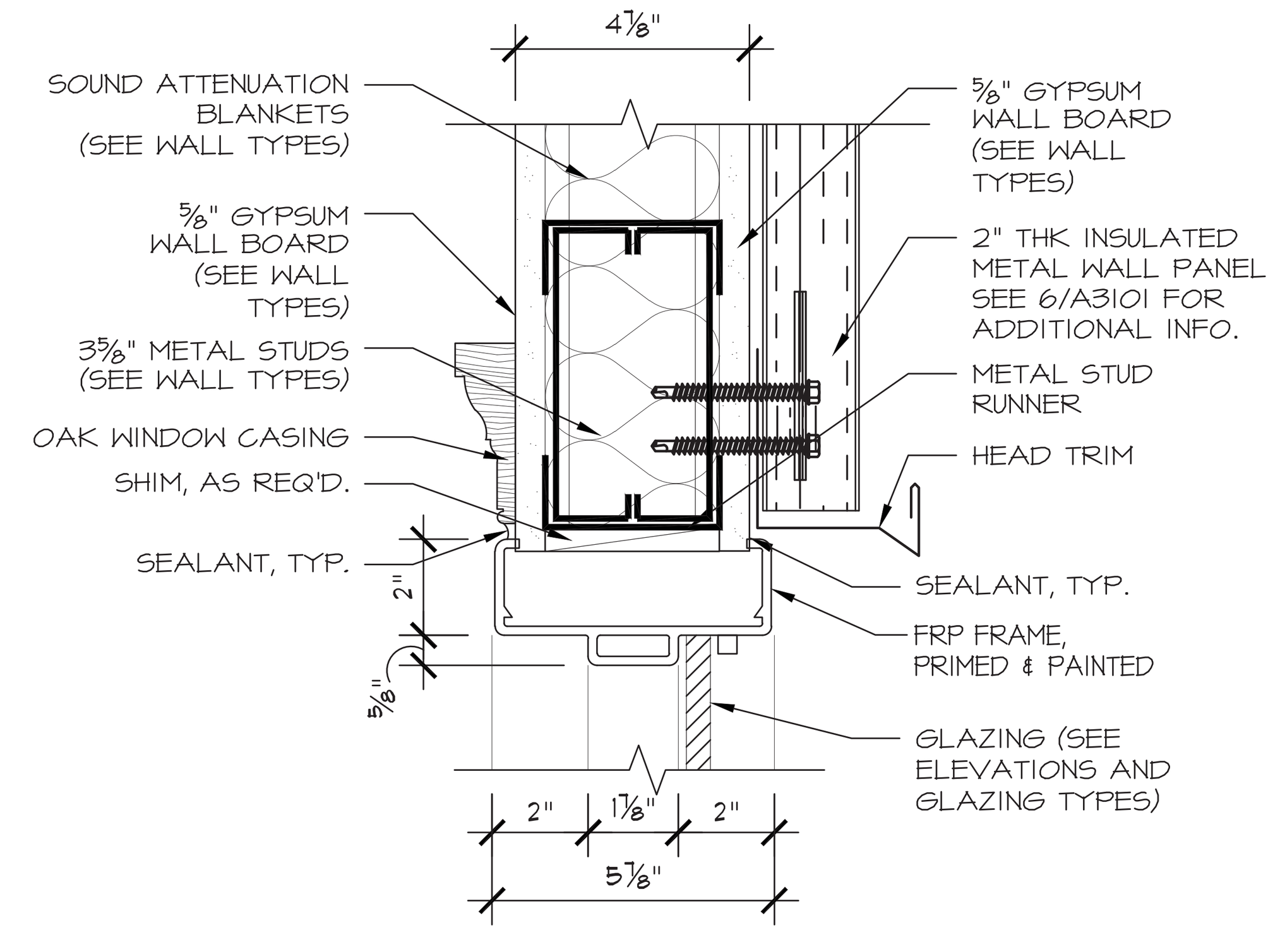
W2 *NOTE:
MANUF. SHALL PROVIDE ADDITIONAL STEEL REINF. AS REQUIRED FOR SIZE OF WINDOW

W3 TEMPERED GLASS

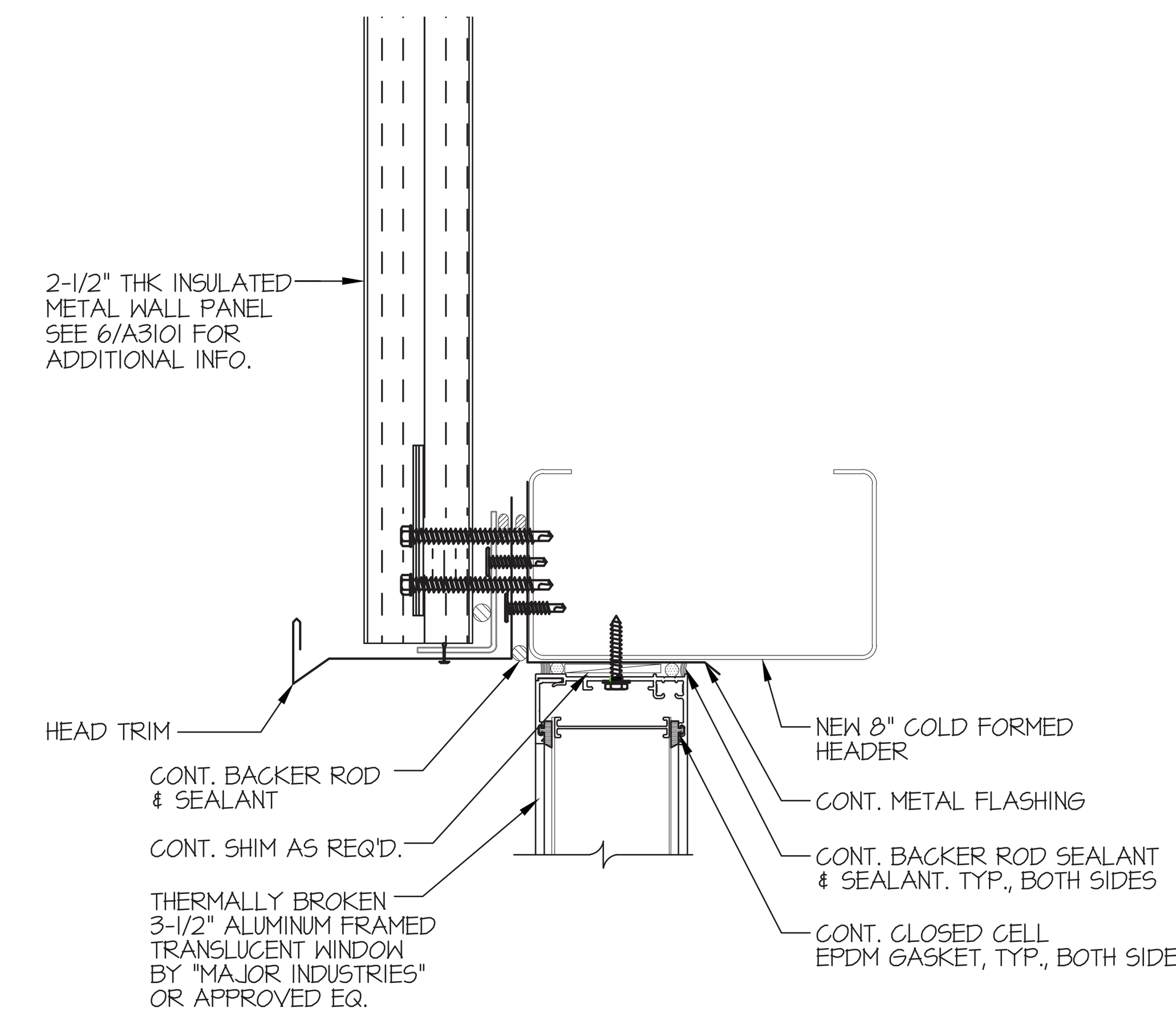
W4 TEMPERED GLASS



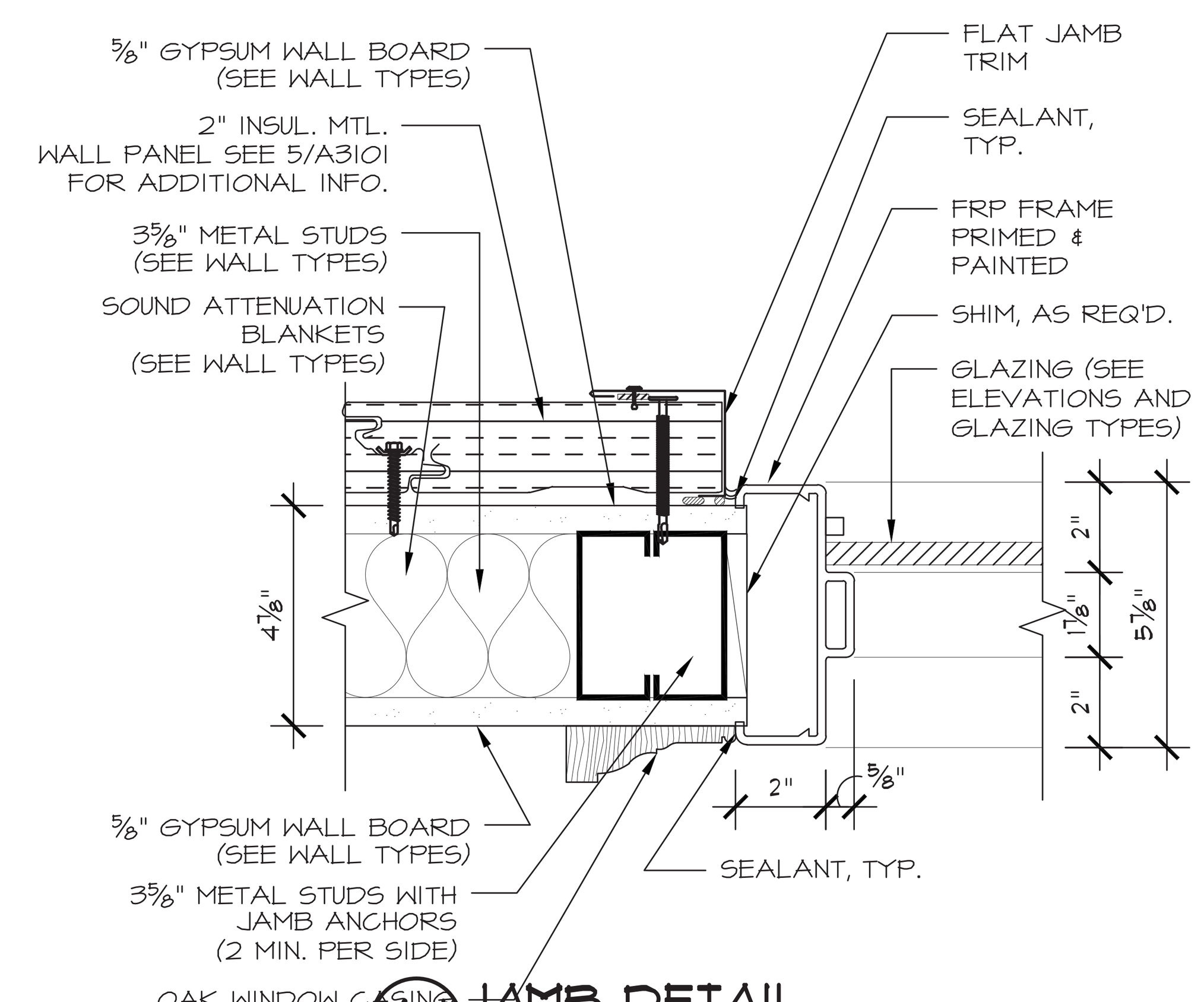
1 TYPICAL CLERESTORY WINDOW FRAMING
SCALE : 1/4" = 1'-0"



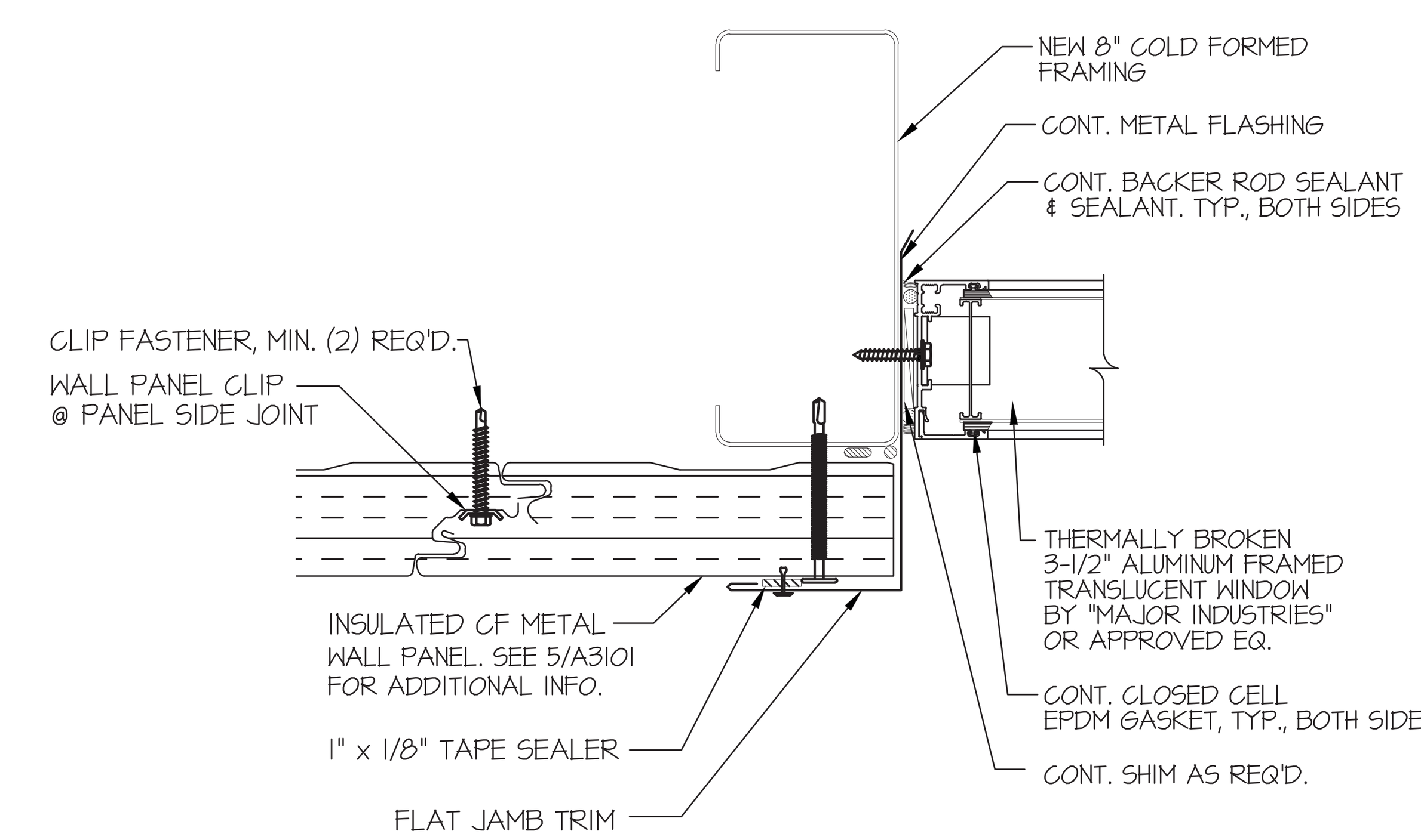
H4 HEAD DETAIL
SCALE : 3" = 1'-0"
0 2" 4" 6"



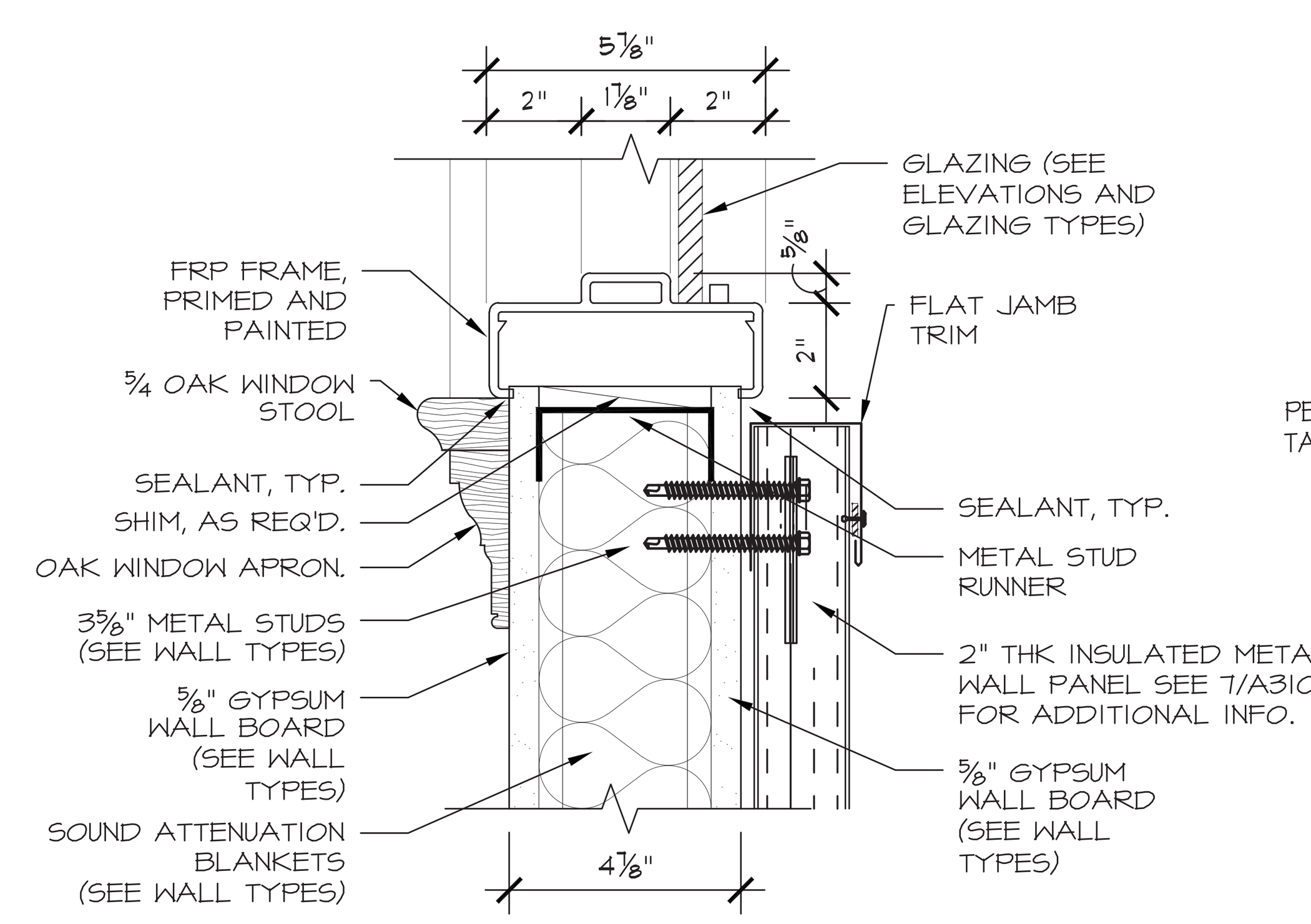
H5 HEAD DETAIL
SCALE : 3" = 1'-0"
0 2" 4" 6"



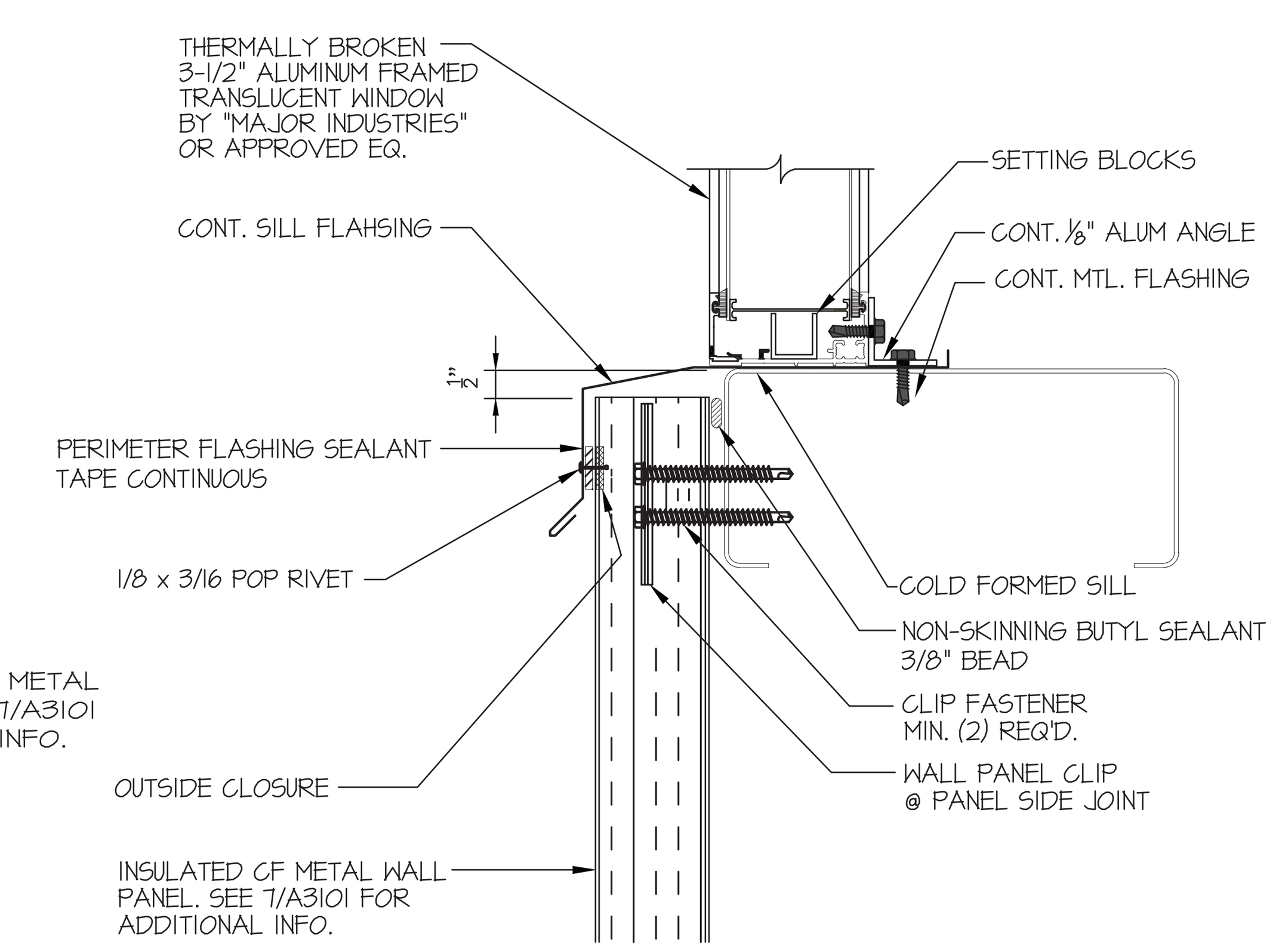
J4 JAMB DETAIL
SCALE : 3" = 1'-0"
0 2" 4" 6"



J5 JAMB DETAIL
SCALE : 3" = 1'-0"
0 2" 4" 6"



S4 SILL DETAIL
SCALE : 3" = 1'-0"
0 2" 4" 6"



S5 SILL DETAIL
SCALE : 3" = 1'-0"
0 2" 4" 6"

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

WINDOW & DOOR DETAILS

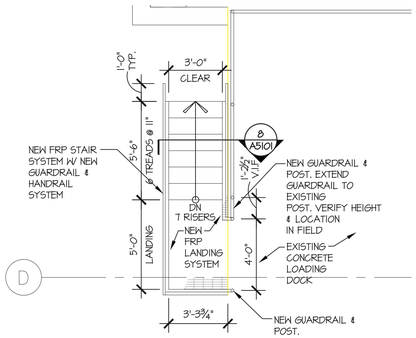
CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

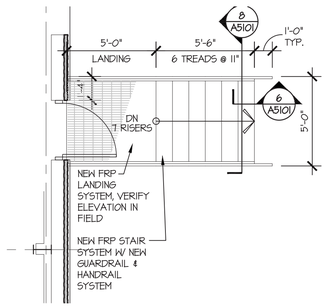
ROBERT A. GROVE No. S5-08320

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	RG ARCHITECTS
APPROVED BY	RG ARCHITECTS

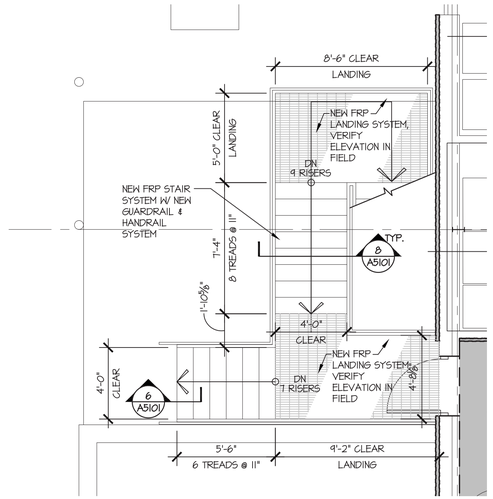
A4002



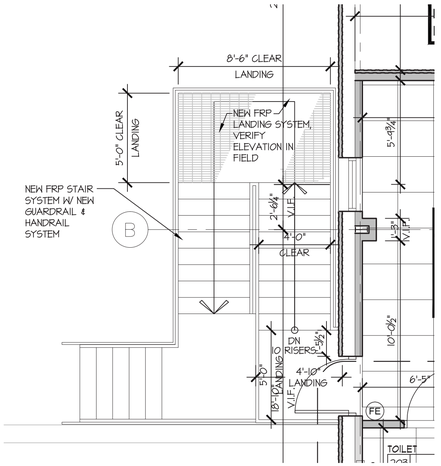
1 ENLARGED STAIR PLAN
SCALE : 1/4" = 1'-0"



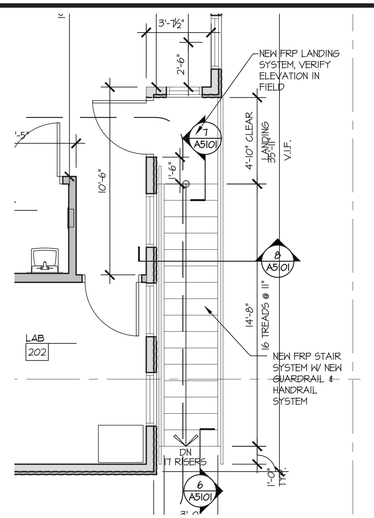
2 ENLARGED STAIR PLAN
SCALE : 1/4" = 1'-0"



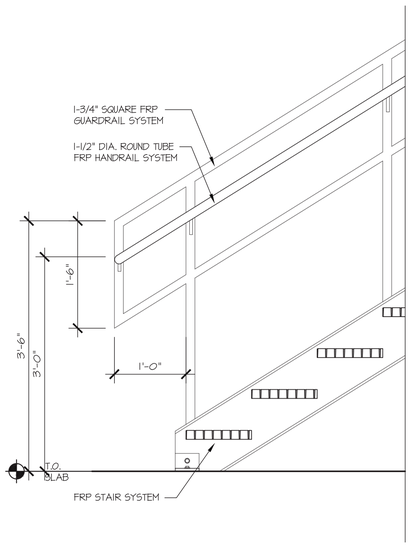
3 ENLARGED STAIR PLAN @ FIRST FLOOR
SCALE : 1/4" = 1'-0"



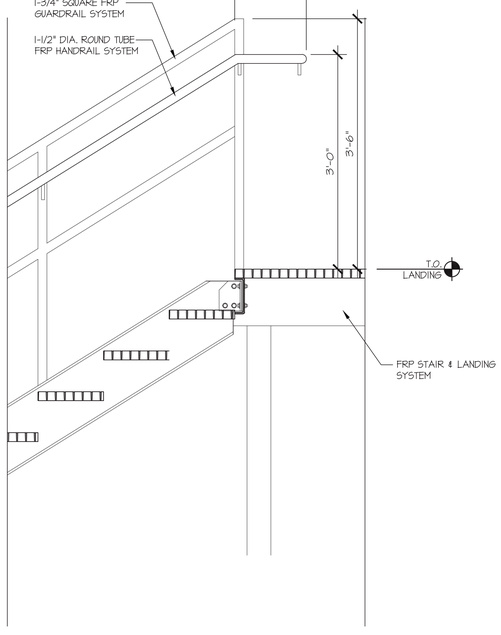
4 ENLARGED STAIR PLAN @ FIRST FLOOR
SCALE : 1/4" = 1'-0"



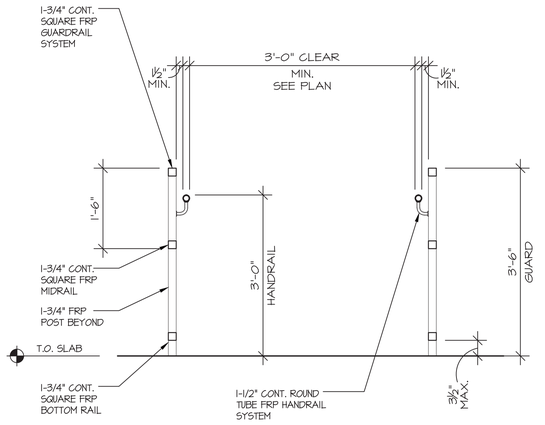
5 ENLARGED STAIR PLAN @ SECOND FLOOR
SCALE : 1/4" = 1'-0"



6 HANDRAIL DETAIL
SCALE : 1" = 1'-0"



7 HANDRAIL DETAIL
SCALE : 1" = 1'-0"



8 TYPICAL HANDRAIL DETAIL
SCALE : 3/4" = 1'-0"

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

STAIR LAYOUT DETAILS

BY	REVISIONS	NO.	DATE

ARCHITECTS
R G Architects, LLC
200 West Main St., Middletown, DE 19709
302.376.8100 302.376.9851 fax
www.rgarchitects.net

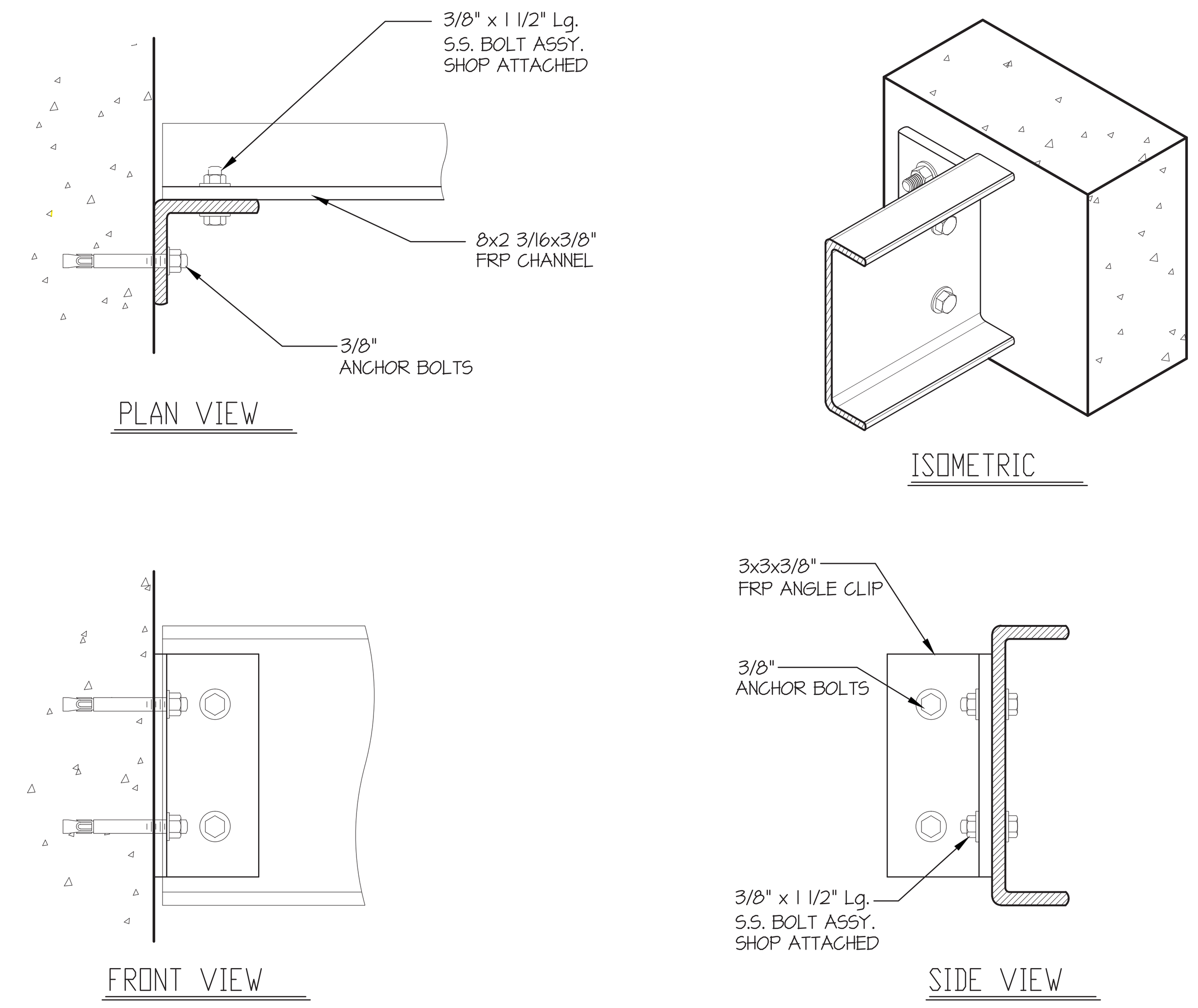
0 1' 2' 4' 8'

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

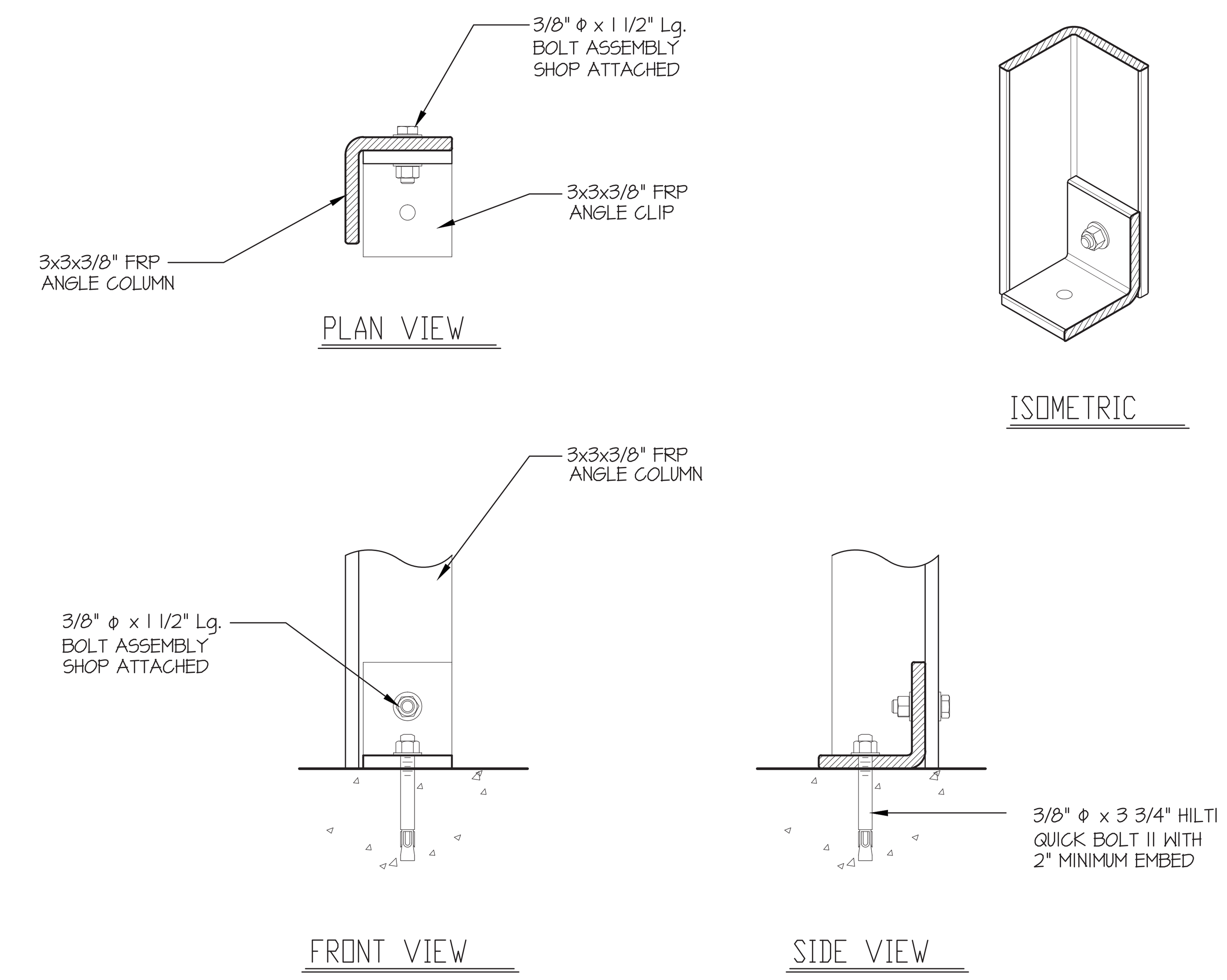
PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	RG ARCHITECTS
APPROVED BY	RG ARCHITECTS

A5101

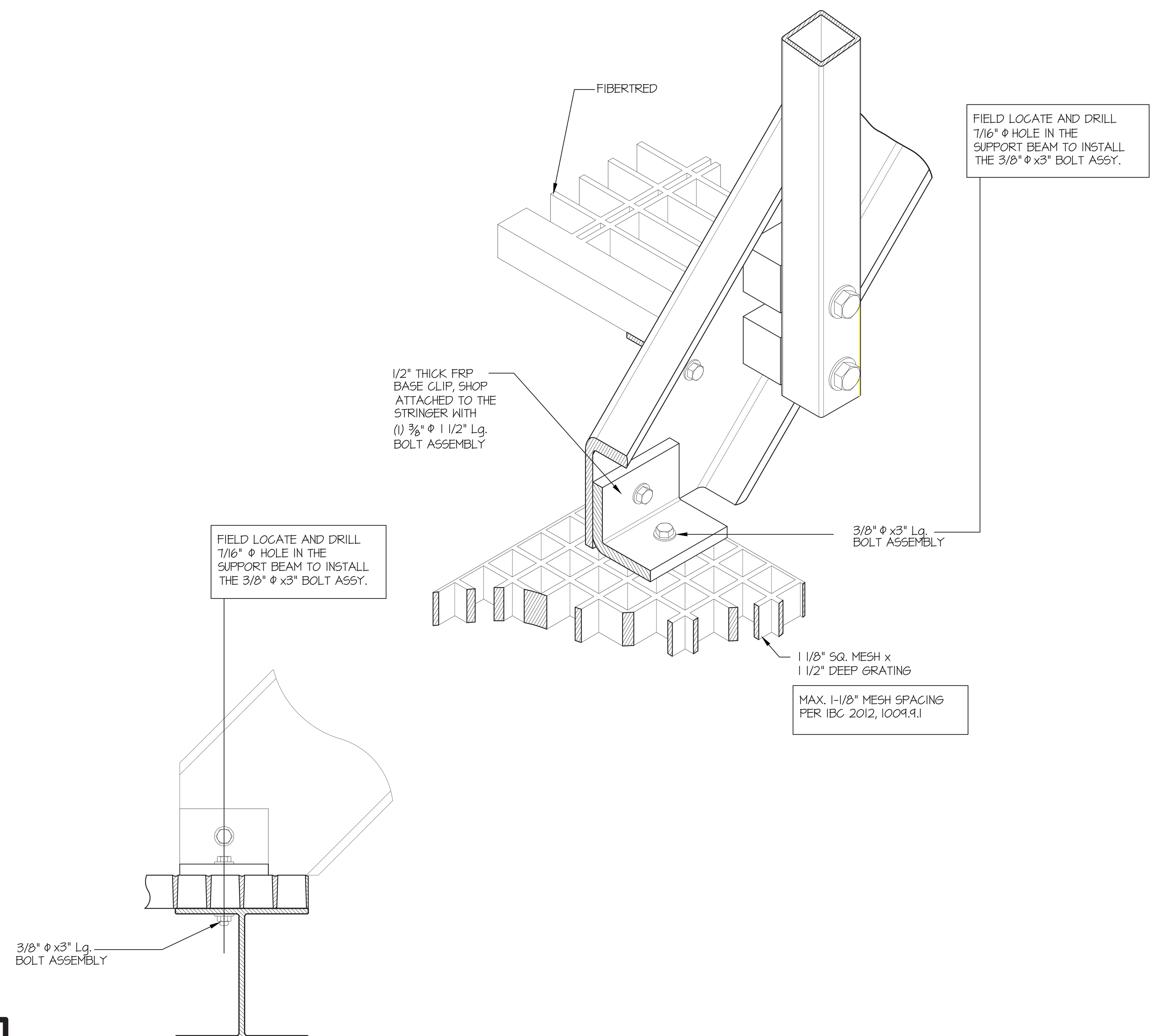
SHEET 18 OF 54



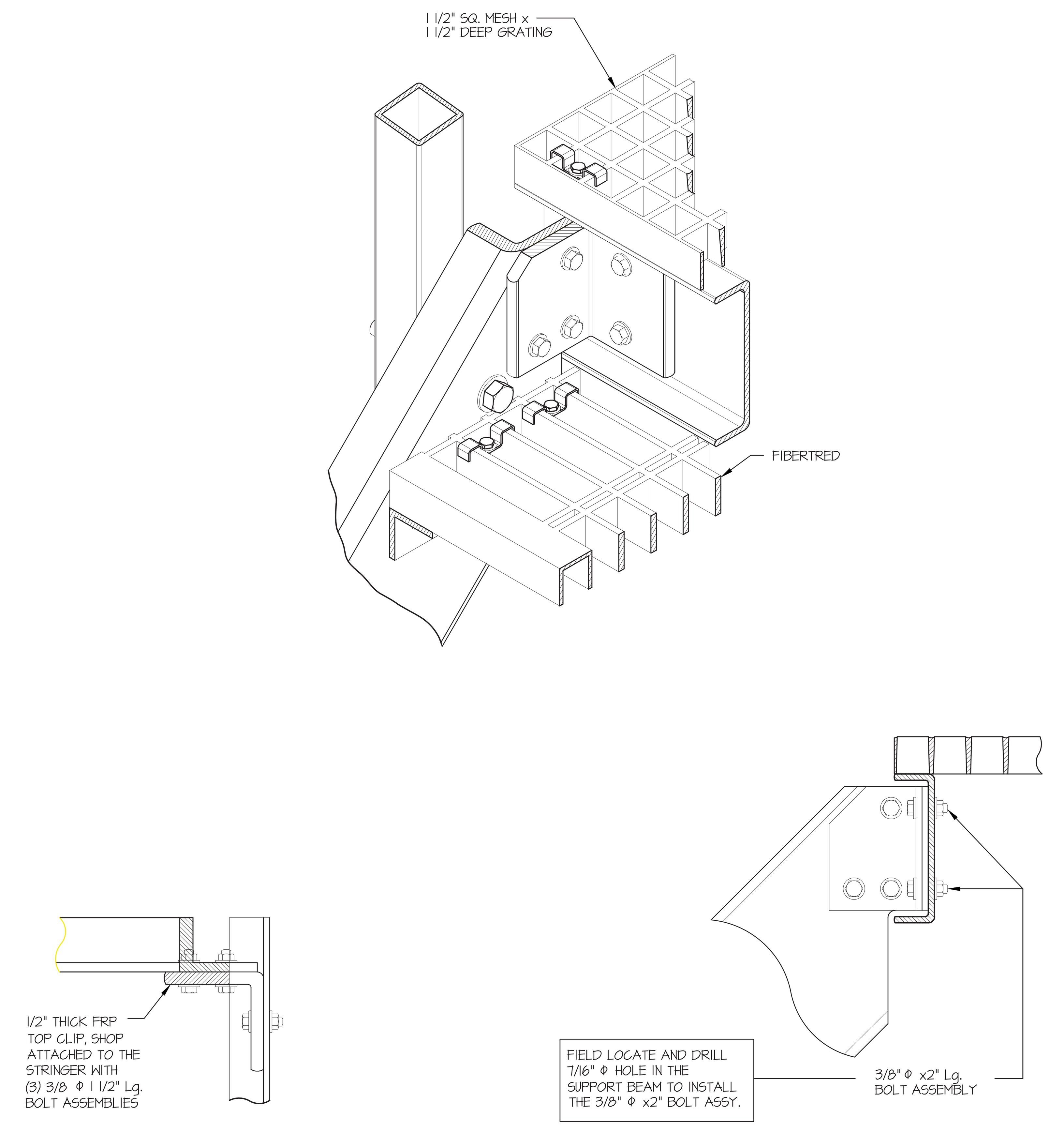
1 STAIR @ WALL ATTACHED DETAIL
SCALE : N.T.S.



2 STAIR @ POST BASE DETAIL
SCALE : N.T.S.



3 STAIR @ STAIR BOTTOM & HANDRAIL ATTACHMENT DETAIL
SCALE : N.T.S.



4 STAIR @ TOP OF STAIR ATTACHMENT DETAIL
SCALE : N.T.S.

NEWARK DELAWARE
Committed to Service Excellence

ROBERT A. GROVE No. S5-08320 STATE OF DELAWARE REGISTERED ARCHITECT

ARCHITECTS
R G Architects, LLC
200 West Main St., Middletown, DE 19709
302.376.8100 302.376.9851 fax
www.rgarchitects.net

0 1' 2' 4' 8'

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

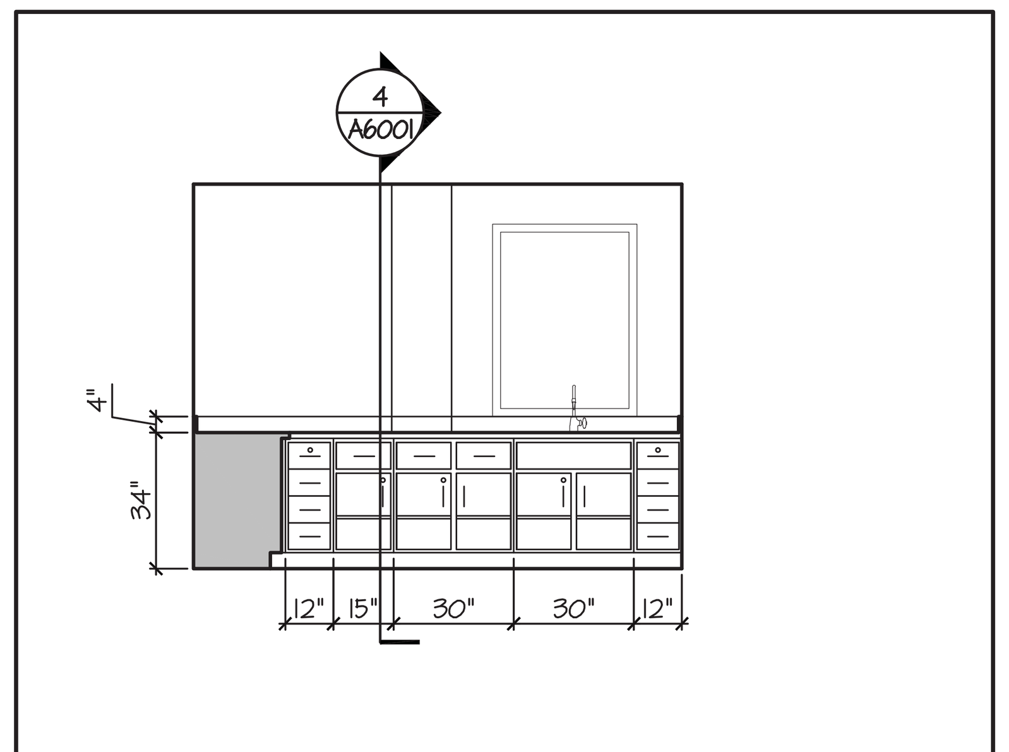
STAIR CONNECTION DETAILS

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

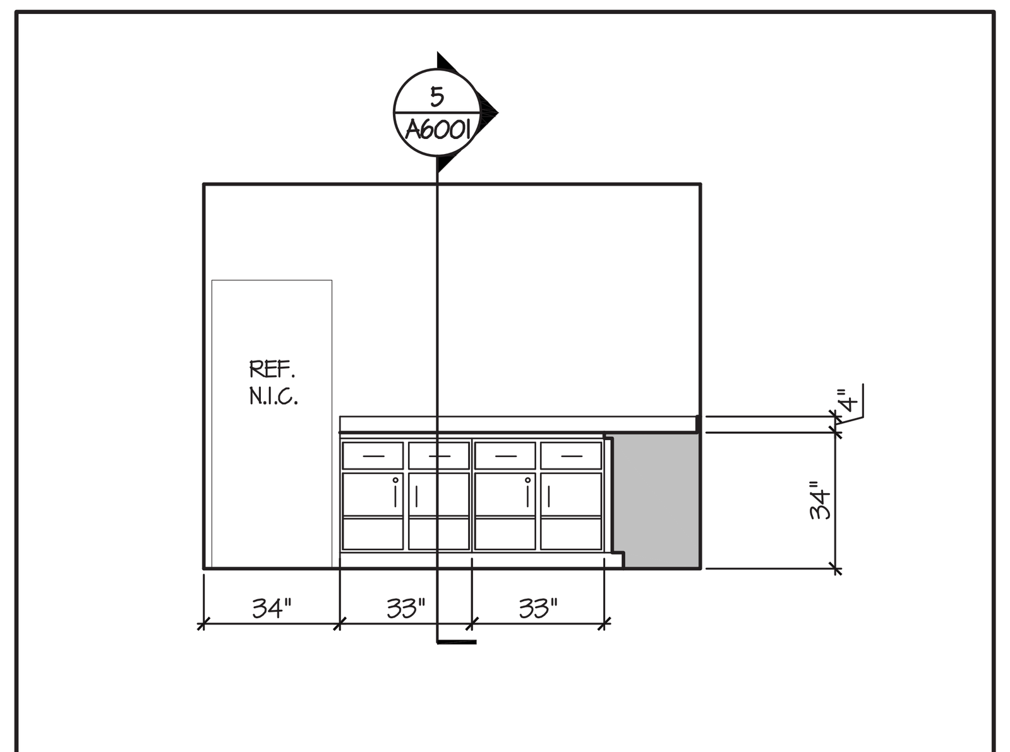
NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	RG ARCHITECTS
APPROVED BY	RG ARCHITECTS

A5102



2 ELEVATION @ LAB 202
SCALE : 1/4" = 1'-0"



3 ELEVATION @ LAB 202
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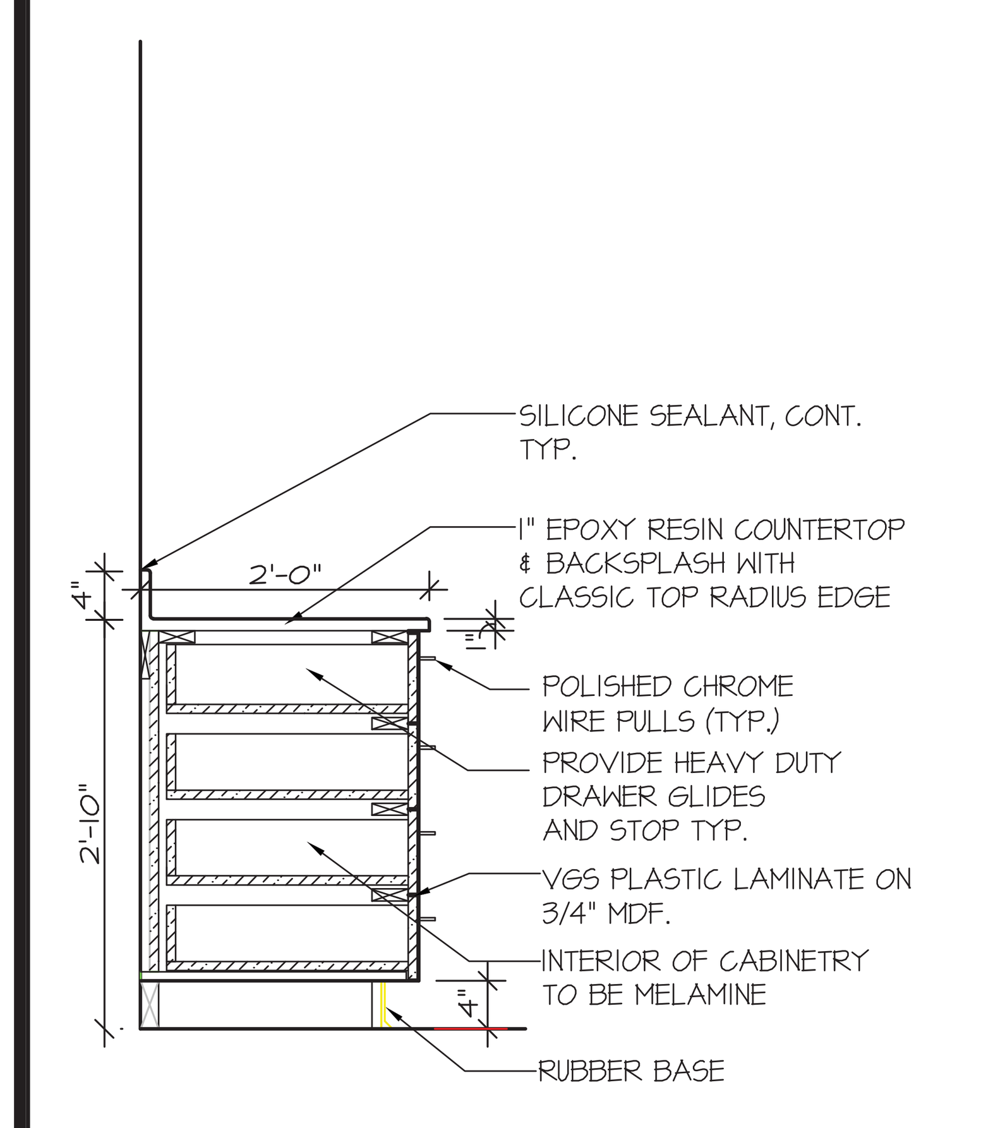

4 SECTION
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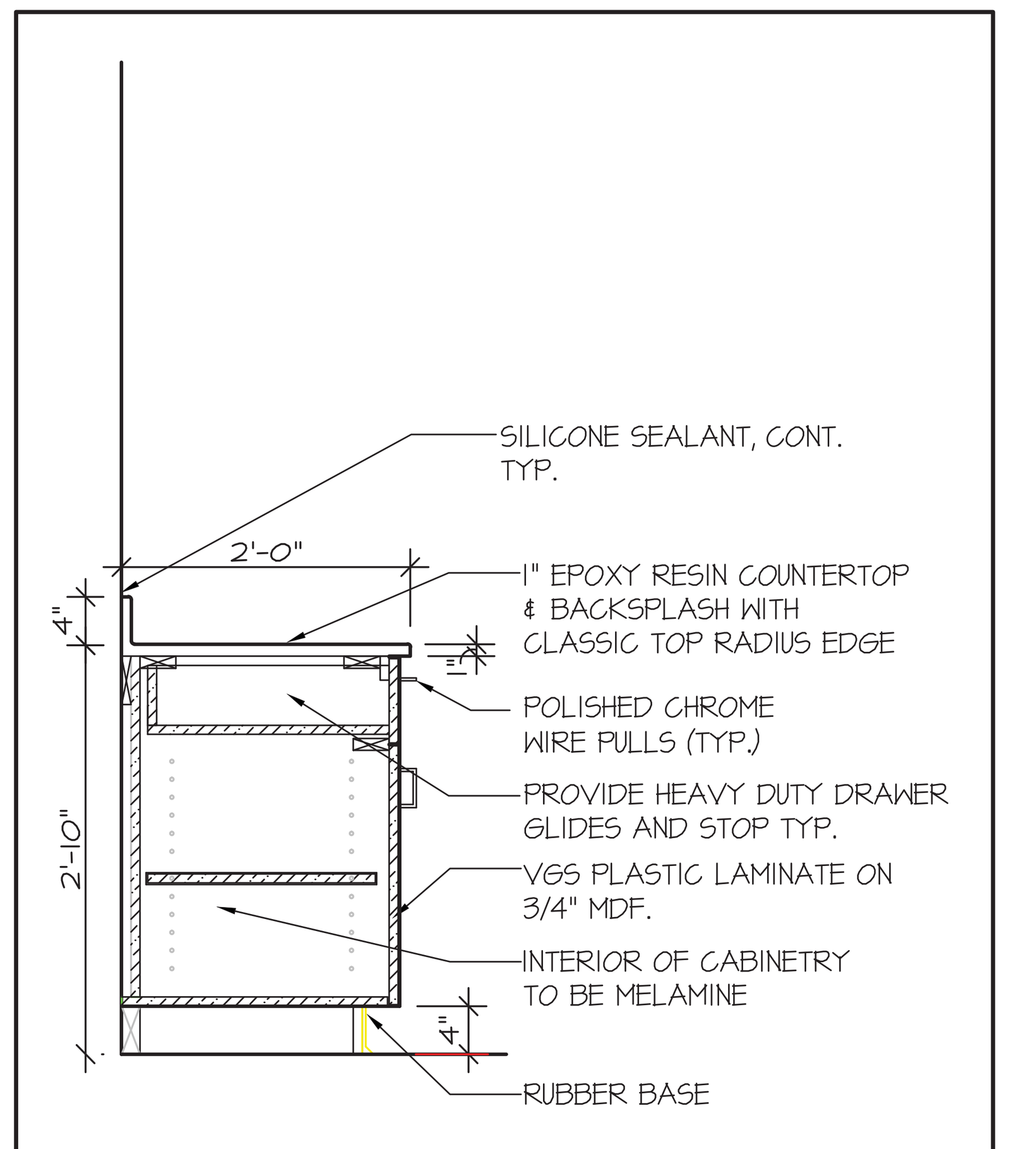
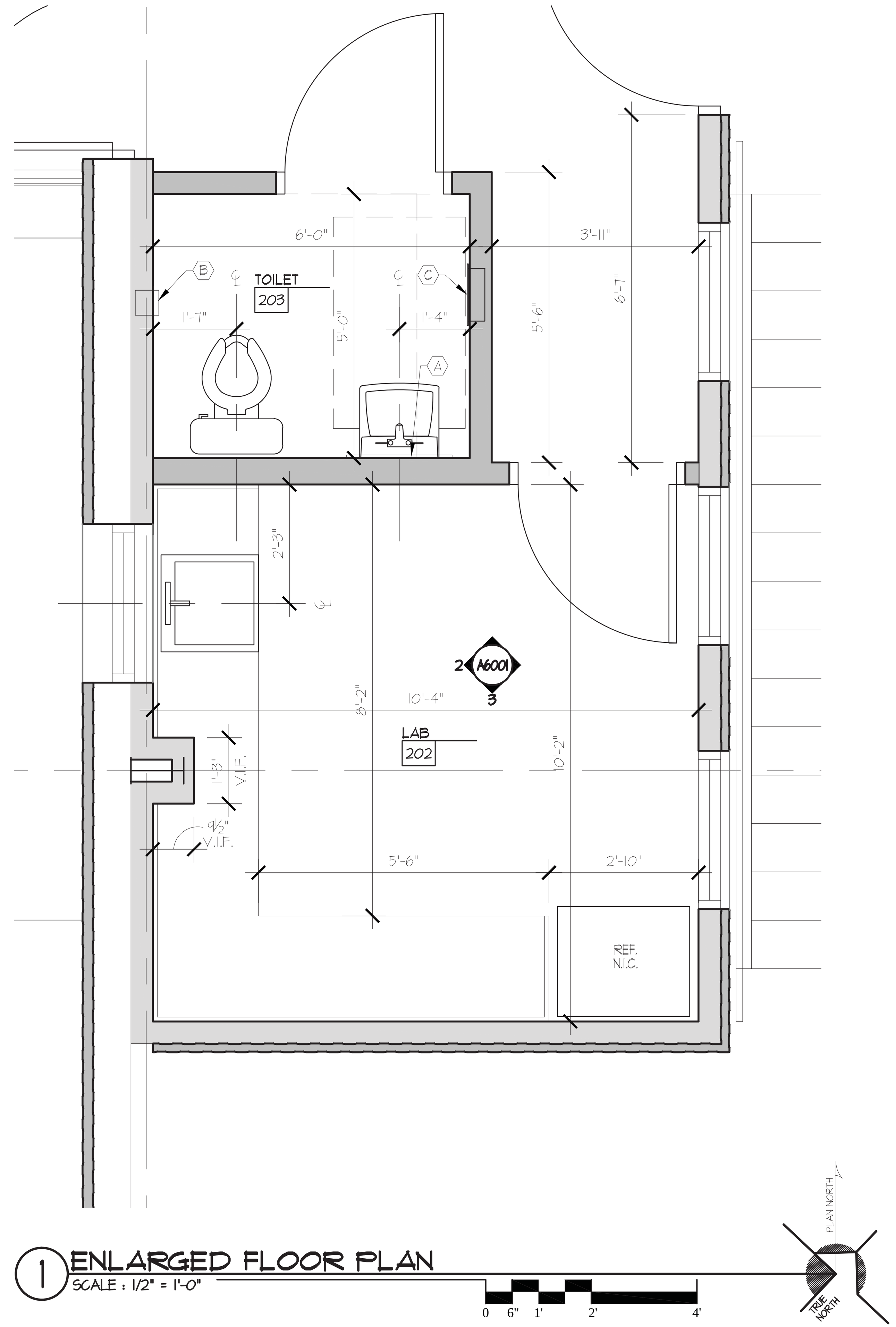


5 SECTION
SCALE : 3/4" = 1'-0"



1 ENLARGED FLOOR PLAN
SCALE : 1/2" = 1'-0"

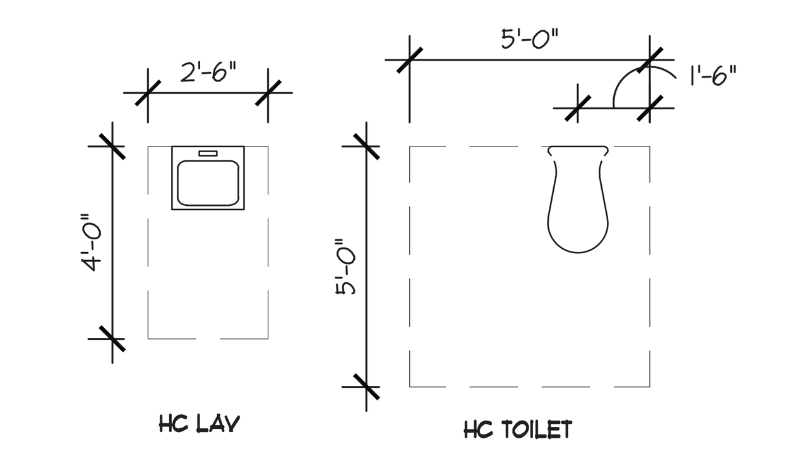
GENERAL NOTES:

1. FIELD VERIFY ALL OVERALL DIMENSIONS PRIOR TO SHOP DRAWING SUBMITTAL.
2. PROVIDE ALL NECESSARY BLOCKING FOR WALL MOUNTED CABINETRY AND SHELVING.
   - FLOOR MOUNTED: 2X6 @ 2" BELOW FINISHED COUNTER.
   - WALL MOUNTED AND HIGH CABINETS: (2) 2X6 LOW AND HIGH.
   - SHELVING: 2X6 AT ALL SHELF STANDARDS
3. PROVIDE LOCKS ON ALL CABINETS AND DRAWERS

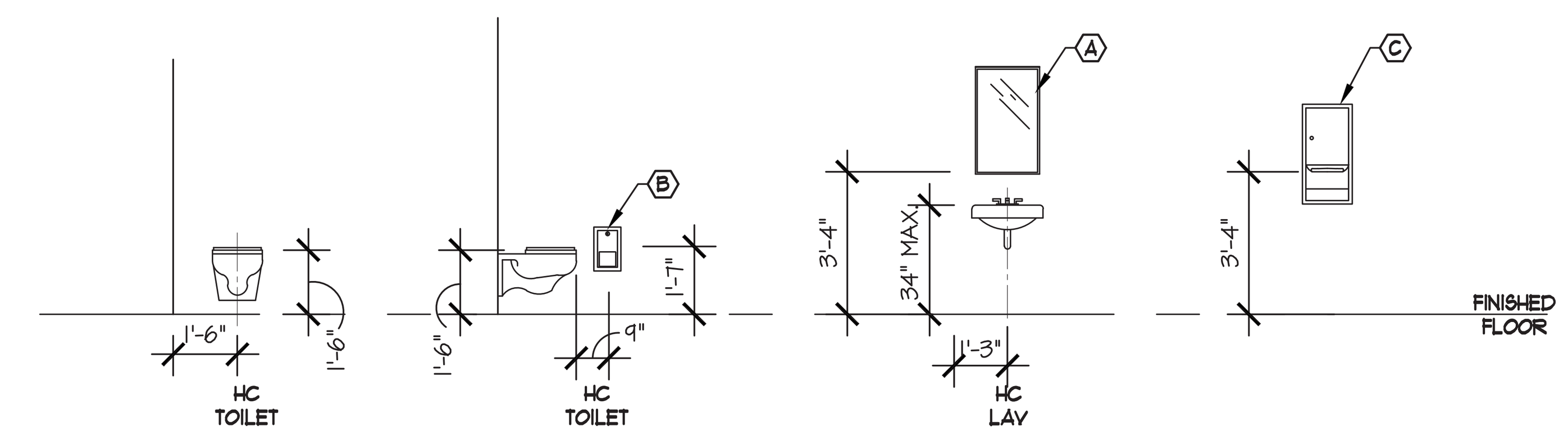
WASHROOM ACCESSORY SCHEDULE

	ITEM	RECESSED	MANUFACTURER	
A	MIRROR W/TEMPERED GLASS		BRADLEY	780-2436-2
B	TOILET PAPER DISPENSER	●	BRADLEY	5412
C	TOWEL DISPENSER	●	BRADLEY	244-10

H C FIXTURE MANUEVERING CLEARANCES



TOILET ACCESSORIES & FIXTURE MOUNTING HEIGHTS



ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

PENNONI ASSOCIATES INC.
Christiana Executive Campus
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Newark, DE 19713-4310
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CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

INTERIOR ELEVATIONS, SECTIONS, & DETAILS

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	RG ARCHITECTS
APPROVED BY	RG ARCHITECTS

A6001

SHEET 20 OF 54

ROBERT A. GROVE No. S5-08320 STATE OF DELAWARE REGISTERED ARCHITECT

ARCHITECTS
R G Architects, LLC
200 West Main St., Middletown, DE 19709
302.376.8100 302.376.9851 fax
www.rgarchitects.net

0 1' 2' 4' 8'

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

NEWARK DELAWARE
Committed to Service Excellence

MEZZANINE LOADS	
DESCRIPTION	VALUE (psf)
¾" PLYWOOD SHEATHING	3
METAL STUDS @ 16" O.C.	3
INSULATION	2
⅝" GYPSUM BOARD	3
MEP & MISC.	4
TOTAL	15
LIVE LOAD	
OFFICES	50

GENERAL

1. The structure is designed, and all work shall conform, to the "2012 International Building Code" and to all other applicable Federal, State, and Local regulations.
2. All codes and standards referenced in these notes, including all specifications referenced within, and all federal, state and local regulations apply to the design, construction, demolition, quality control and safety of all work performed on the project. Use the latest adopted editions of the codes and standards.
3. In case of conflict between the General Notes, and drawings, the most rigid requirements must be followed.
4. Work not indicated on a part of the drawings but similar to that shown at corresponding places shall be provided at no additional cost.
5. Minor details or incidental items not shown or specified, but necessary for a proper and complete installation, shall be included in the work.
6. All costs of investigations, redesigns and re-installation due to improper installation of structural elements and other items not in conformance with the Contract Documents shall be at the Contractor's expense.
7. The structural drawings shall be used in conjunction with the specifications, architectural, civil, and MEP drawings. If there is a discrepancy between drawings notify the Architect prior to performing the work.
8. Store and protect all construction materials from exposure to the elements.
9. Acceptance of deviations from any of the requirements of these notes, the drawings, and specifications is at the sole discretion of the Engineer. Acceptance of a deviation from any requirement shall not be construed as permitting any other deviation.
10. Construction materials shall be provided free from defect and installed plumb and true to the limits set forth on the Construction Documents by experienced tradesmen.
11. Special inspection is required of all work indicated on the Structural Drawings and/or specifications. Submit periodic reports to Architect and the Construction Code Official within one business day after receipt. Submit a final inspection report summary for each division of work, signed and sealed by a licensed professional Engineer in the state of jurisdiction, indicating that inspections were performed and that work was completed in accordance with the Contract Documents. The Owner will engage a qualified testing and inspection firm to perform the Special Inspections.
12. Major openings in the structure are indicated on the Contract Documents. Coordinate locations and work for all openings, sleeves, concrete housekeeping pads, inserts, and depressions shown on the Architectural, Civil, Structural, Mechanical, Electrical, and Plumbing Drawings prior to construction. Locations of sleeves and openings shall be approved by the Structural Engineer of Record (SER).
13. See Architectural Drawings for locations of non-load bearing drywall partitions. Provide slip connections that allow vertical movement at the heads of all such partitions. Connections shall be designed and installed to support the top of the walls for the code-required lateral load.
14. Verify all existing information shown (dimensions, elevations, etc.) and notify the Architect of any discrepancies prior to fabrication of any structural component.
15. Verify and/or establish all existing conditions and dimensions at the site. Failure to notify the Architect of unsatisfactory conditions constitutes acceptance of existing conditions.
16. If the existing field conditions do not permit the installation of the work in accordance with the Contract Documents, notify the Architect immediately and provide a sketch of the condition with a proposed modification of the details given on the Contract Documents. Do not commence work until the condition is resolved and the modification is approved by the Architect.
17. Where alterations involve the existing supporting structure, provide shoring and protection to ensure the structural integrity of the existing structure.
18. Determine the allowable construction loads and provide design and construction of falsework, formwork, staging, bracing, sheeting, and shoring, etc. to protect the existing structure. This work shall be designed by a Professional Engineer licensed in the project jurisdiction and engaged by the Contractor.
19. Provide sheeting, bracing, and underpinning to prevent any lateral or vertical movements of existing buildings, streets, site structures, adjacent grade and any existing utilities. Prepare detailed signed and sealed shop drawings indicating all work to be performed. Submit shop drawings in accordance with the Contract requirements.
20. In no case shall heavy equipment be permitted closer than 8'-0" from any foundation wall. If it is necessary to operate such equipment closer than 8'-0" to the wall, the Contractor shall be the sole responsible party and shall provide adequate supports or brace the wall to withstand the additional loads superimposed from such equipment.
21. Methods, procedures and the sequences (other than that noted on the Construction Documents) of construction are the responsibility of the Contractor(s). Take all necessary precautions to maintain and insure the integrity of the structure at all stages of construction.
22. Job site safety and construction procedures are the sole responsibility of the Contractor. Guidelines for construction safety shall be in accordance with, but not limited to OSHA Safety and Health Regulations for Construction and all local ordinances or codes that may be applicable.
23. All Contractors and Subcontractors on this project are responsible for the proper performance of their work, selection of means and methods, coordination with other trades, safety, and security on the job site.
24. All construction work shall be coordinated with the Owner to minimize interference with existing facility operations.
25. All Subcontractors shall be provided and must work with a full set of contract documents.

GENERAL (CONTINUED)

26. Submit for review, drawings and calculations for all assemblies identified to be designed by an Engineer engaged by the Contractor. The design of these assemblies is the responsibility of the Contractor's Engineer registered in the Project's jurisdiction. All submittals shall bear this Engineer's seal and signature. Review shall be for general conformance with the project requirements as indicated on the Construction Documents.
27. SHOP DRAWINGS
    A. Shop drawings for all structural materials shall be submitted to the Architect/Engineer for review prior to the start of fabrication and commencement of work. The review period shall be a minimum of two (2) weeks.
    B. Reproduction of any portion of the Structural Contract Drawings for resubmittal as shop drawings is prohibited. Shop drawings produced in such a manner will be rejected and returned.
    C. Shop drawings submitted in hard copy shall consist of (1) print and (1) reproducible. Only one marked up reproducible will be returned. If shop drawings are submitted electronically, then only electronic copies of reviewed submittals will be returned. No paper copies will be returned.
    D. Shop drawings shall bear the Contractor's stamp of approval which shall constitute certification that the Contractor has verified all construction criteria, materials, and similar data and has checked each drawing for completeness, coordination, and compliance with the Contract Documents.
    E. The shop drawings shall include dimensioned floor and roof edges, openings and sleeves at all roofs, floors, and walls required for all trades.
    F. The detailer must use column and lintel designations as shown on the Engineer's drawings.
    G. All revisions to shop drawings after the first submission must be so identified on subsequent submissions with revision tags and clouds.
    H. Review of shop drawings shall not relieve the Contractor of any contract requirement, even if such items are not shown on the shop drawings.

FOUNDATIONS

1. Foundations have been designed for an allowable bearing capacity and footing elevations established in accordance with available information from adjacent sites, similar soil conditions in the project vicinity, and/or soil guidelines from IBC. A new Subsurface Investigation Report, with foundation recommendations, has not been provided by the Owner for this project at the time of design. Engage a licensed qualified Geotechnical Engineer to verify the soil information and bearing capacity during construction.
2. Footings shall bear on undisturbed natural soils and/or engineered fill with a minimum bearing capacity of 2,000 psf.
3. Investigate existing foundation locations and elevations along adjacent structures, via test pits or other methods, prior to the commencement of work.
4. Maintain a maximum 1:1 slope from the bottom edge of any excavation to adjacent excavations or bottom of foundations.
5. Compact soil to not less than the following percentages of maximum dry density of modified proctor (ASTM D1557) unless noted otherwise:

   Under building foundations - 95%
   Under building slabs, steps, pavements - 93%

CAST-IN-PLACE CONCRETE

1. Concrete work shall comply with the requirements of the latest adopted editions of ACI "Building Code Requirements for Structural Concrete and Commentary (ACI 318)", ACI "Specifications for Structural Concrete (ACI 301)", and ACI "Measuring, Mixing, Transporting, and Placing Concrete (ACI 304)".
2. Reinforcing steel shall be detailed, fabricated and installed in accordance with the latest editions of CRSI "Manual of Standard Practice", CRSI "Placing Reinforcing Bars" and ACI "Detailing Manual (SP-66)".
3. Concrete shall have a minimum 28-day compressive strength of 3000 psi.
4. Maximum water/cement ratios:

   Foundations 0.50

5. All concrete, unless noted otherwise, shall be normal weight concrete (145 pcf +/-) with cement conforming to ASTM C150, Type I. Maximum aggregate size shall be 1-1/2" for footings and 3/4" for all other members, conforming to ASTM C33.
6. Retain a laboratory to provide testing of concrete; slump per ASTM C143, air content per ASTM C231 or C173, cylinder tests per ASTM C31 and C39. One set of six (6) 6x12 cylinders for each 50 cubic yards for each mix used. More cylinders are required if using 4x8 for testing, reference ACI. Reports of all tests to be submitted to the Architect.

CAST-IN-PLACE CONCRETE (CONTINUED)

7. Submit mix designs for each class of concrete for review and approval prior to placing any concrete. Compressive strength must be substantiated by a suitable experience record or by the method of laboratory trial batches. The pertinent ACI criteria shall apply to the proportioning of mix designs and to the acceptance of concrete produced for the job. If during construction, any class of concrete fails to meet the acceptance criteria, take such steps as are deemed necessary by the SER to improve subsequent test results at no additional cost to the Owner. The contractor shall also bear the cost of special investigation, testing or remedial work necessary because of evidence of low strength or non-conforming concrete or workmanship.
8. Submit reinforcing steel shop drawings and mix designs to Architect for review and approval prior to placing any concrete.
9. The addition of water at the jobsite is prohibited, unless approved in writing by the SER. Coordinate the requirements of the concrete supplier and pumper to ensure pumpable and workable mixes) without the addition of water at the jobsite. The use of plasticizers, retarders and other admixtures shall be at the option of the contractor and subject to the approval of the SER. Follow the recommendations of the manufacturer for proper use of retarders and other admixtures. Use of calcium chloride or other chloride bearing admixtures is not permitted.
10. Reinforcing steel shall be manufactured from high-strength billet steel, deformed type, conforming to ASTM A615, Grade 60.
11. All concrete pads, sidewalks, etc., not cast integrally with structural slabs, shall be reinforced with 6x6-W2.9xW2.9 WWR at mid-depth of slab, unless shown otherwise.
12. Reinforcing steel clear cover shall be as follows unless noted otherwise:

    Reinforcing steel in concrete cast against soil 3"

    Refer to ACI 318 (latest edition) for conditions not noted.
13. Reinforcing steel shall be accurately placed with clear cover in accordance with ACI 318, and adequately supported before the concrete is placed. Reinforcing steel shall be secured against displacement within permitted tolerances. Provide plastic tipped bolsters and chairs at exposed slabs and beams. When supporting epoxy coated reinforcing, bolsters and chairs shall be epoxy coated.
14. Provide all high chairs, spacers, supports, etc., necessary for proper placement of reinforcing steel.
15. All reinforcing steel shall be securely wired together in the forms. Two way mats of steel shall be tied at alternate intersections both ways.
16. Bonding agent or cement slurry coat shall be used where new concrete is placed against existing concrete, unless noted otherwise.
17. All concrete shall be formed, unless otherwise approved by the SER. All pours shall be terminated by forms. Provide keys between adjacent pours.
18. All concrete, including foundation work, shall be vibrated. Proper use of vibrators is required. Vibrators shall not be used to transport concrete.
19. Chamfer all exposed concrete corners/edges unless noted otherwise on Architectural Drawings.
20. All embedments, including anchor rods, shall be in place prior to placing concrete.
21. Concrete shall not be pumped through aluminum pipes and shall not be placed in contact with aluminum forms, mixing drums, buggies, chutes, conveyors or other equipment made of aluminum.
22. Repair concrete exhibiting voids due to snap ties, honeycombs, rock pockets, and runs, spalls or otherwise damaged surfaces, with dry pack or cement grout. Finish flush with adjoining surfaces. At the discretion of the SER, or as, qualified by lab testing, excessive honeycombs or exposed reinforcement that jeopardize the design, shall be removed and replaced at the expense of the contractor.
23. Bonding agent or cement slurry coat shall be used where new concrete is placed against existing concrete, unless noted otherwise.
24. All concrete shall be formed, unless otherwise approved by the SER. All pours shall be terminated by forms. Provide keys between adjacent pours.
25. All concrete, including foundation work, shall be vibrated. Proper use of vibrators is required. Vibrators shall not be used to transport concrete.
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CAST-IN-PLACE CONCRETE (CONTINUE)

30. Provide 7 days of curing immediately after finishing using one of the following methods. Curing membranes must be compatible with Floor finishes.
    a. Continuously watered burlap
    b. Waterproof membranes
    c. Sprayed-on liquid membranes (Refer to the manufacturer's specifications for requirements)
31. Protect the concrete surface between finishing operations on hot, dry days, or any time plastic shrinkage cracks may develop, using wet burlap, plastic membranes or fogging. Curing of concrete is to start as soon as finishes will not be damaged by curing operations. It is not permissible to delay the curing until the morning after the concrete is placed
32. Cold weather concreting shall be in accordance with ACI-306. Hot weather concreting shall be in accordance with ACI-305R.
33. Throughout construction, the concrete work shall be adequately protected against damage due to excessive loading, construction equipment and activities, materials or methods, sun, wind, ice, rain, flowing water, snow, excessive heat, fire, stains, abrasions, and freezing temperatures.
34. When drilling concrete for expansion bolts, adhesive anchors, pipe penetrations, etc. avoid drilling or cutting of any reinforcing or causing damage to concrete. Holes shall be prepared to receive bolts per the manufacturer's specifications.
35. Epoxy adhesives shall be used where dowels are to be installed into existing concrete. Submit manufacturer information for engineer review prior to installation.

STRUCTURAL STEEL

1. Structural steel material, design, detailing, fabrication and erection shall be in accordance with the following references:
   "Specification for Structural Steel Buildings", AISC's 13th Edition
   "Structural Welding Code, AWS D1.1", AWS
   "Engineering for Steel Construction", AISC
   "Detailing for Steel Construction", AISC
2. The steel contractor shall furnish an affidavit from the producer of the steel certifying that the steel meets the minimum requirements as defined by the applicable ASTM Specification.
3. The structural steel contractor shall verify the foundation construction for anchor rod location, elevation of top of concrete and/or leveling plates and bearing plates, alignment, etc., prior to start of erection.
4. The steel contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, adequacy of connections, coordinating his work with that of all other trades and performing his work in a safe and satisfactory manner.
5. Coordinate with architectural drawings.
6. Structural steel rolled shapes shall conform to ASTM A992, unless noted otherwise. Angles, channels, plate and rods shall conform to ASTM A36.
7. Structural steel pipe shall conform to ASTM A53, Type E or S, or ASTM A501.
8. Anchor rods shall conform to ASTM F1554, Grade 36, unless noted otherwise.
9. Bolts shall be designed as bearing type bolts, except as noted herein or on plan. Bearing bolts shall be installed in accordance with the "snug tight" condition as outlined in the AISC Specifications for Structural Joints Using ASTM A325 or A490 Bolts", latest revision. Connection bolts shall have a hardened washer placed under the turned element.
10. The fabricator is responsible for the selection, design and detailing of all connections not fully detailed in the Contract Documents. Typical connection details are indicated on the drawings for design intent only. The fabricator shall have a Professional Engineer registered in DE prepare and/or review the connection designs prior to submitting the shop drawings for review and approval. Connections shall be designed and detailed in accordance with AISC's "Steel Construction Manual".
11. Where reaction values of beams are not shown on the structural drawings, the connections selected shall have a minimum capacity equal to 75% of the total uniform load, (in the case of composite design, the connections selected shall have a minimum value equal to 75% of the total uniform load), as shown in AISC's tables of Uniform Load Constants. The effect of concentrated loads near an end connection shall be considered. No steel connection shall consist of less than two (2) high-strength bolts or equivalent welds.
12. Steel connections shall be bolted with 3/4" (min.) diameter A325-TC high-strength bolts or welded, unless noted or approved otherwise. Bolts shall be spaced 3" o.c. (min.), unless approved otherwise by the SER.
13. Provide a minimum 3/8" thick single plate for all connections to pipe and tube columns. Provide through plates if required per AISC's guidelines.
14. Submit steel shop drawings for review and approval prior to fabrication.
15. All welding shall be done by AWS certified welders in accordance with AWS D1.1 (latest edition). Minimum fillet weld shall be 3/16".
16. Steel welding rods shall be E70XX (low hydrogen @ 50 KSI material).
17. Welds left exposed on the finished structure shall be ground smooth.
18. Splicing of structural steel members where not detailed on the Contract Documents is prohibited without prior written approval of the SER as to location, type of splice and connection to be made.
19. Steel shall have a shop coat of a VOC compliant rust-inhibitive primer, except where steel is to receive spray-on fireproofing, concrete encasement or galvanizing coating. All steel shall be thoroughly cleaned by power tool cleaning (SSPC-SP3) prior to painting, unless noted otherwise.
20. All exterior steel (and any other framing noted to be galvanized) shall be galvanized per ASTM A123. Galvanized steel shall be thoroughly cleaned by power tool cleaning prior to galvanizing. The steel erector shall touch up any points of welding or damage to the galvanized finish in accordance with ASTM A780. Galvanizing of connectors shall conform to ASTM A153.

STRUCTURAL STEEL

21. All contact surfaces within slip-critical, bolted connections and welding areas shall be free of oil, paint or galvanizing.
22. Framing members shall be equally spaced and parallel or at right angles to one another with their webs in a vertical plane, unless noted otherwise.
23. Provide holes, as required, for attaching other materials to structural steel; refer to architectural drawings.
24. All columns shall be furnished with cap plates and base plates of sizes called for and shall be shop welded.
25. Notify the SER of any fabrication and erection errors or deviations and receive written approval before any field corrections are made.
26. Fabricator shall take full responsibility for errors and or required corrections to steel fabricated prior to SER's and Architect's approval of shop drawings.

LIGHT GAGE METAL FRAMING

1. All stud and/or joist framing members shall be of the type, size and gage as shown on the plans and shall be manufactured by Dietrich Industries or approved equal.
2. Light gage framing labeled as structural members on structural drawings are load carrying members. Members supplied shall meet or exceed the capacities of the members shown.
3. All framing members and accessories shall be formed from steel having a galvanized coating meeting the requirements of ASTM A653.
4. All galvanized joists, studs, headers and accessories shall be formed from steel that corresponds to the requirements of the latest AISI standards with amendments.
5. All studs, joists, tracks, bridging and accessories shall have the following material strengths:
   a. 16 gage and heavier..... Fy = 50 KSI
   b. 18 gage and lighter..... Fy = 33 KSI
6. Unless noted otherwise, all connections are to be fastened with a minimum of (3) #12-14 screws or equivalent welds as noted.
7. Welding shall be done in accordance with the latest edition of "AWS D1.3 Structural Welding Code-Sheet Steel". Sequencing of welds shall be such to avoid distortion of members. Replace all members when burn through occurs during welding operations.
8. All tracks bearing on concrete are to be anchored with minimum 1-1/4" long x 0.145" diameter power driven studs having steel washers at 2'-0" o.c. maximum (2 per track section, minimum), unless noted otherwise.
9. Wall stud bridging shall be provided @ 4'-0" o.c. and attached in a manner to prevent stud rotation.
10. Studs shall be plumbed, aligned and securely attached to the flanges or webs of both upper and lower tracks.
11. The maximum spacing of the light gage metal studs is to be 16" o.c.
12. Refer to the architectural details for studs at corners, windows, door jambs, etc.
13. All framing members and components of connections are to be 18 gage minimum, unless noted or approved otherwise.
14. Temporary bracing required to maintain a plumb structure shall be provided until erection is complete and all attached (adjacent) framing is installed and connected to the lateral restraint system.
15. Splices in joists and studs are not permitted.
16. Joists shall be located directly over bearing studs or a load distribution member to be provided at the top track.
17. Studs in non-bearing conditions shall be connected at the top of the wall with components that accommodate 1" of vertical deflection.
18. Refer to the architectural drawings and the specifications for non-structural metal stud wall construction.
19. Lintels/headers indicated on drawings as cold formed metal lintels shall be built up using light gage members without web openings.
20. Manufacturer shall provide holes in framing for passage of pipe and wiring. Manufacturer shall ensure that holes do not interfere with connection locations.
21. Cut cold formed metal framing members with saws. Flame cutting or shearing is not permitted.
22. The light gage framing contractor shall have a minimum of 5 years experience in the fabrication and erection of light gage metal framing systems.
23. Care shall be exercised at all times to avoid damage through careless handling during unloading, storing and erection of steel framing members and subassemblies.
24. The ends of steel joists shall be reinforced to adequately stiffen the joist web and to transfer the loads to the supports. Minimum end bearing shall be 1-1/2 inches, unless shown otherwise in details.
25. Joining of structural framing members shall be made with self-drilling screws or welding. Wire tying of framing members in structural applications shall not be permitted. All welds shall be touched up with a zinc-rich paint.
26. Light gage diagonal strap x-bracing shall be attached to both sides of all studs and installed and securely anchored to suitable restraining columns or walls prior to the erection of structure above.
27. During erection, the builder shall provide means of adequate distribution of concentrated loads so that the carrying capacity of any steel framing member is not exceeded.
28. Load bearing studs must be seated tight to track web (top & bottom); i.e., 1/16" maximum gap between end of stud and web of track. Fasten to track with (2) #8 self-drilling screws per side or by welding.
29. Jamb studs shall be welded to top and bottom tracks.

NEWARK DELAWARE
Committed to Service Excellence

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ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

KEITH M. WETTSTEIN, No. 20389, PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

STRUCTURAL GENERAL NOTES

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	NONE
DRAWN BY	RJK
APPROVED BY	GEL

S0001

SHEET 21 OF 39

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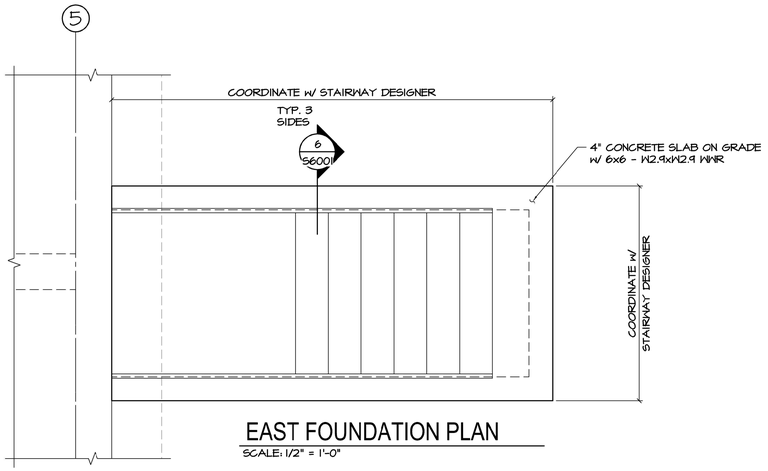
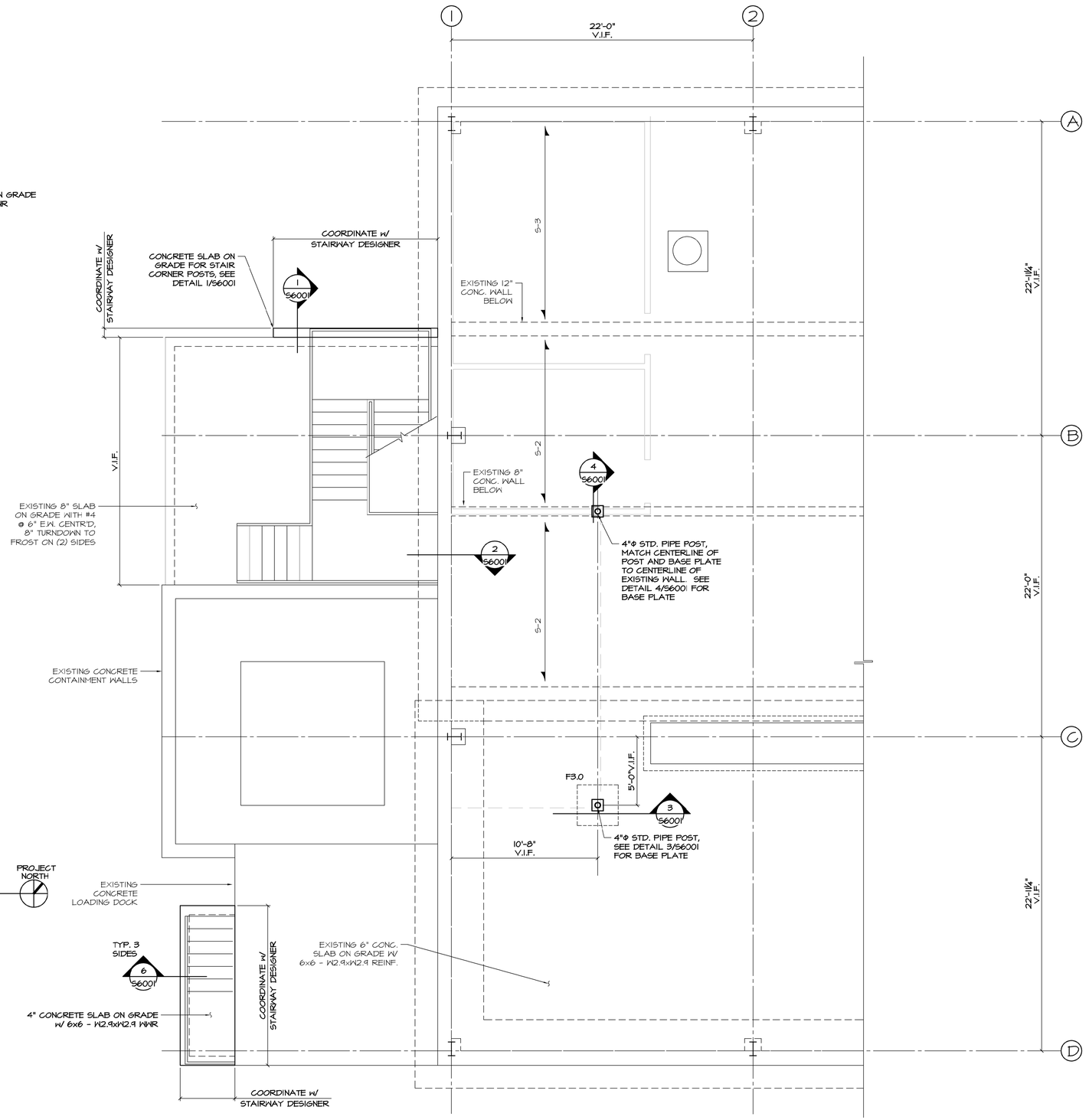


EAST FOUNDATION PLAN

SCALE: 1/2" = 1'-0"



FOUNDATION PLAN

SCALE: 1/4" = 1'-0"

NOTES:
1. EXISTING INFORMATION AND DIMENSIONS SHOWN BASED ON DRAWINGS 13-17 OF "WATER TREATMENT FACILITIES PLANT" SET PREPARED BY TATMAN & LEE ASSOCIATES, INC., DATED 10/1/1990.
2. S-2 DENOTES EXISTING 9" CONCRETE SLAB W/ #5 @ 12" O.C. BOTTOM LONGITUDINAL AND #4 @ 12" O.C. TRANSVERSE.
3. S-3 DENOTES EXISTING 12" CONCRETE SLAB W #5 @ 8" O.C. BOTTOM LONGITUDINAL AND #4 @ 12" O.C. TRANSVERSE.

FOOTING SCHEDULE				
MARK	WIDTH	LENGTH	THICKNESS	REINFORCING
F3.0	3'-0"	3'-0"	1'-0"	(4) #5 E.W. BOTTOM

PENNONI ASSOCIATES INC.
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ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

KEITH L. WEITKNECHT No. 20099 PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

STAIRWAY FOUNDATION PLAN

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	1/4" = 1'-0"
DRAWN BY	RJK
APPROVED BY	GEL

S0101

SHEET 22 OF 39

NEWARK DELAWARE
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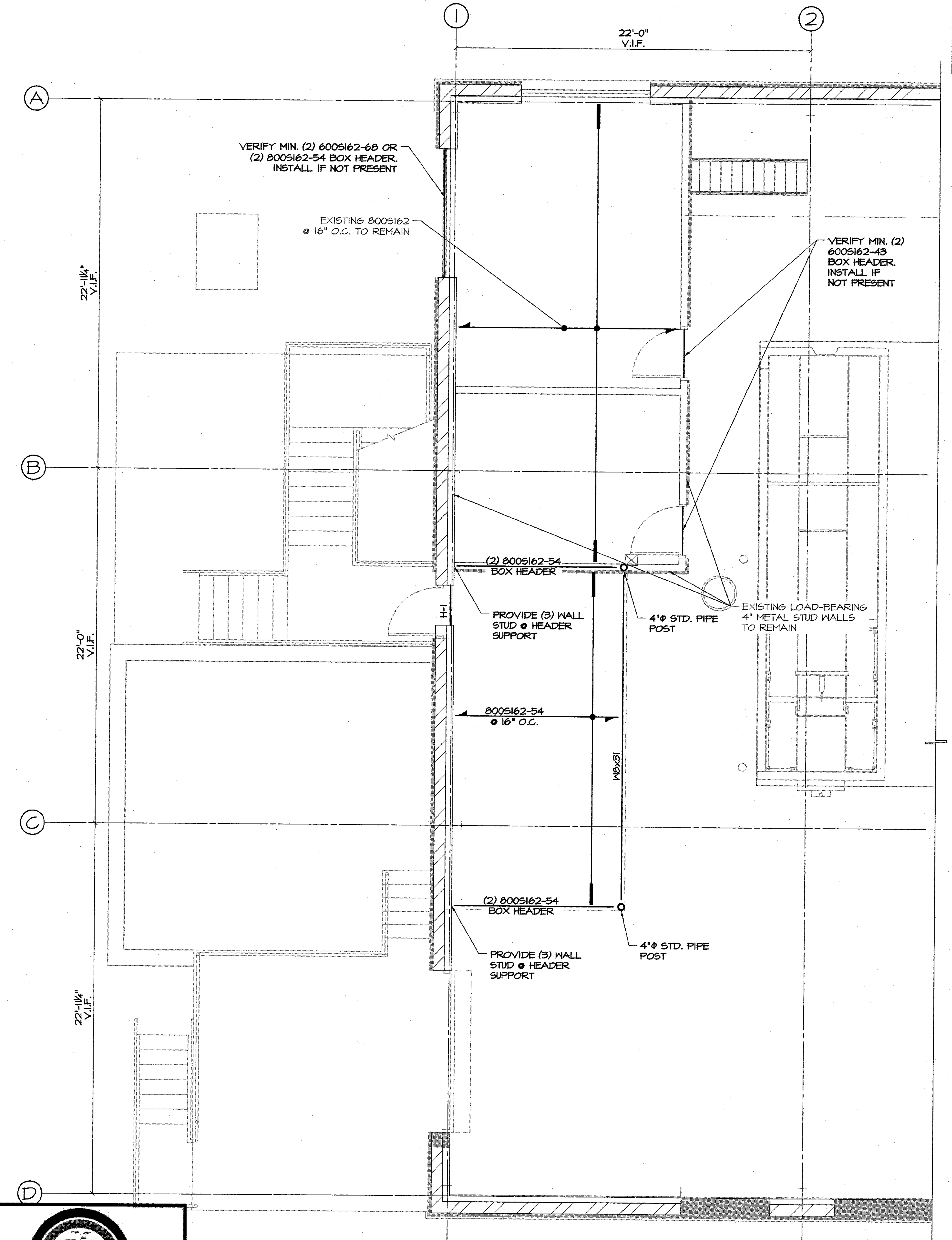
W:\PROJECTS\CNEW\CNEW1612\Curtis WTP Improvements\DESIGN_PUBLISH\S0101.dwg PLOTTED: 1/6/2017 11:18 AM BY: David S. Bolek PLOTSTYLE: PWBcolour.ctb PROJECT STATUS: DRAFT

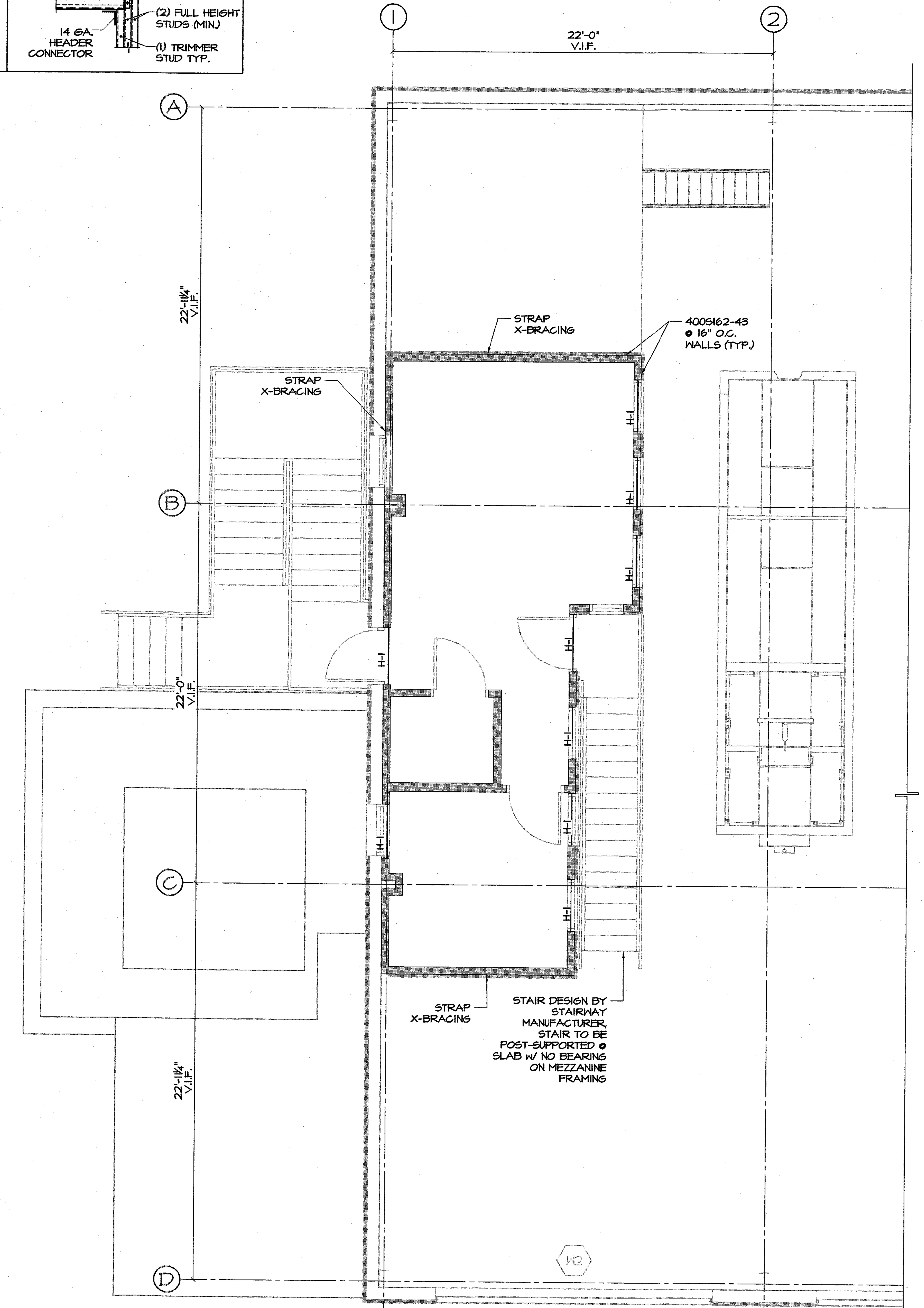
HEADER SCHEDULE		
MARK	DESCRIPTION	DETAIL
H-1	BOX HEADER (2) 600S162-43 w/ 400T125-43 TOP AND BOTTOM TRACK. PROVIDE WEB STIFFENERS IN EACH END OF BOX HEADER	TYP. STUDS; (3) 12-14 SCREWS PER SIDE AT HEADER TO STUD MIN.; (2) FULL HEIGHT STUDS (MIN.); 14 GA. HEADER CONNECTOR; (1) TRIMMER STUD TYP.



MEZZANINE FRAMING PLAN

SCALE: 1/4" = 1'-0"

NOTE:
1. VERIFY EXISTING METAL FLOOR AND WALL STUD SIZES DURING CONSTRUCTION. MINIMUM SIZE TO BE 400S162-43 @ 16" O.C. FOR WALLS AND 800S162-54 @ 16" O.C. FOR FLOOR. NOTIFY ENGINEER IF ANY DISCREPANCIES ARE NOTED.



MEZZANINE CEILING FRAMING PLAN

SCALE: 1/4" = 1'-0"

NOTE:
1. MEZZANINE CEILING TO BE ACOUSTIC DROP CEILING TILE SUSPENDED FROM EXISTING BUILDING ROOF FRAMING. CONNECT CEILING TO METAL STUD WALLS.

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KEITH WEITKNECHT LICENSE No. 20089 PROFESSIONAL ENGINEER DELAWARE

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

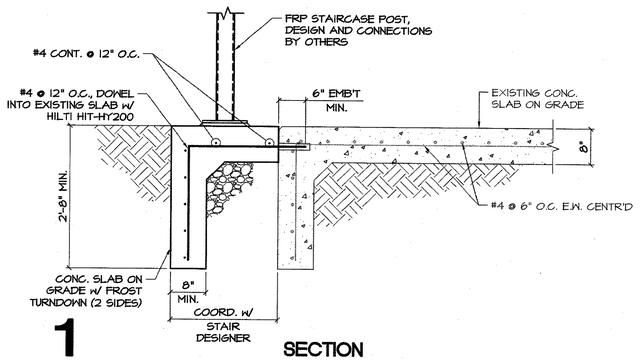
STRUCTURAL MEZZANINE PLAN

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

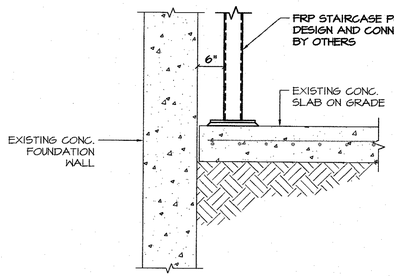
PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	1/4" = 1'-0"
DRAWN BY	RJK
APPROVED BY	GEL

S0102



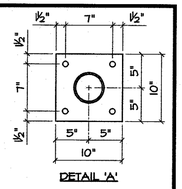
1 SECTION

SCALE: 3/4"=1'-0"

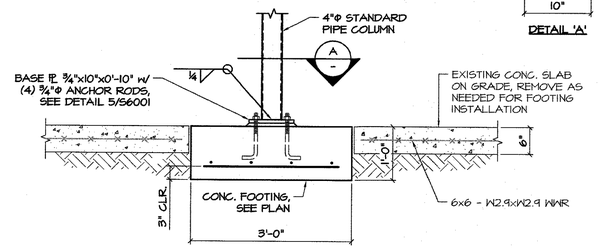


2 SECTION

SCALE: 3/4"=1'-0"

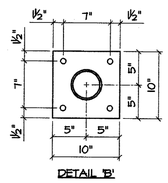


DETAIL 'A'

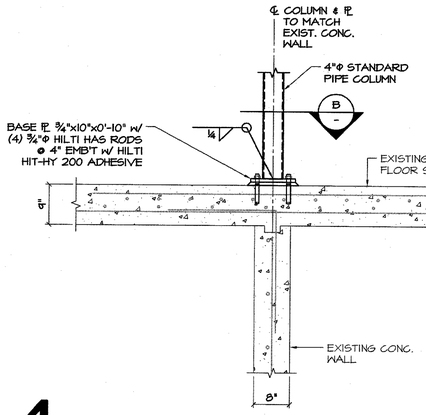


3 SECTION

SCALE: 3/4"=1'-0"

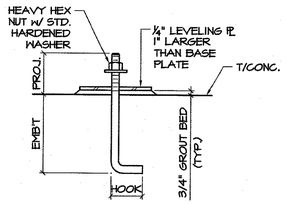


DETAIL 'B'



4 SECTION

SCALE: 3/4"=1'-0"

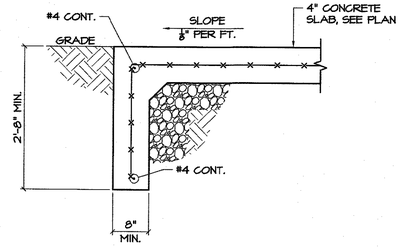


ANCHOR ROD SCHEDULE

MARK	MATERIAL	QTY.	DIA.	EMB'T	HOOK	PROJ.	THREAD	ANCHOR PLATE
①	F1554-36 KSI	4	3/4"	9"	3"	4"	3 1/2"	N/A

5

SCALE: 3/4"=1'-0"



6 TURNED DOWN SLAB DETAIL

SCALE: 3/4"=1'-0"

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

STRUCTURAL DETAILS

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

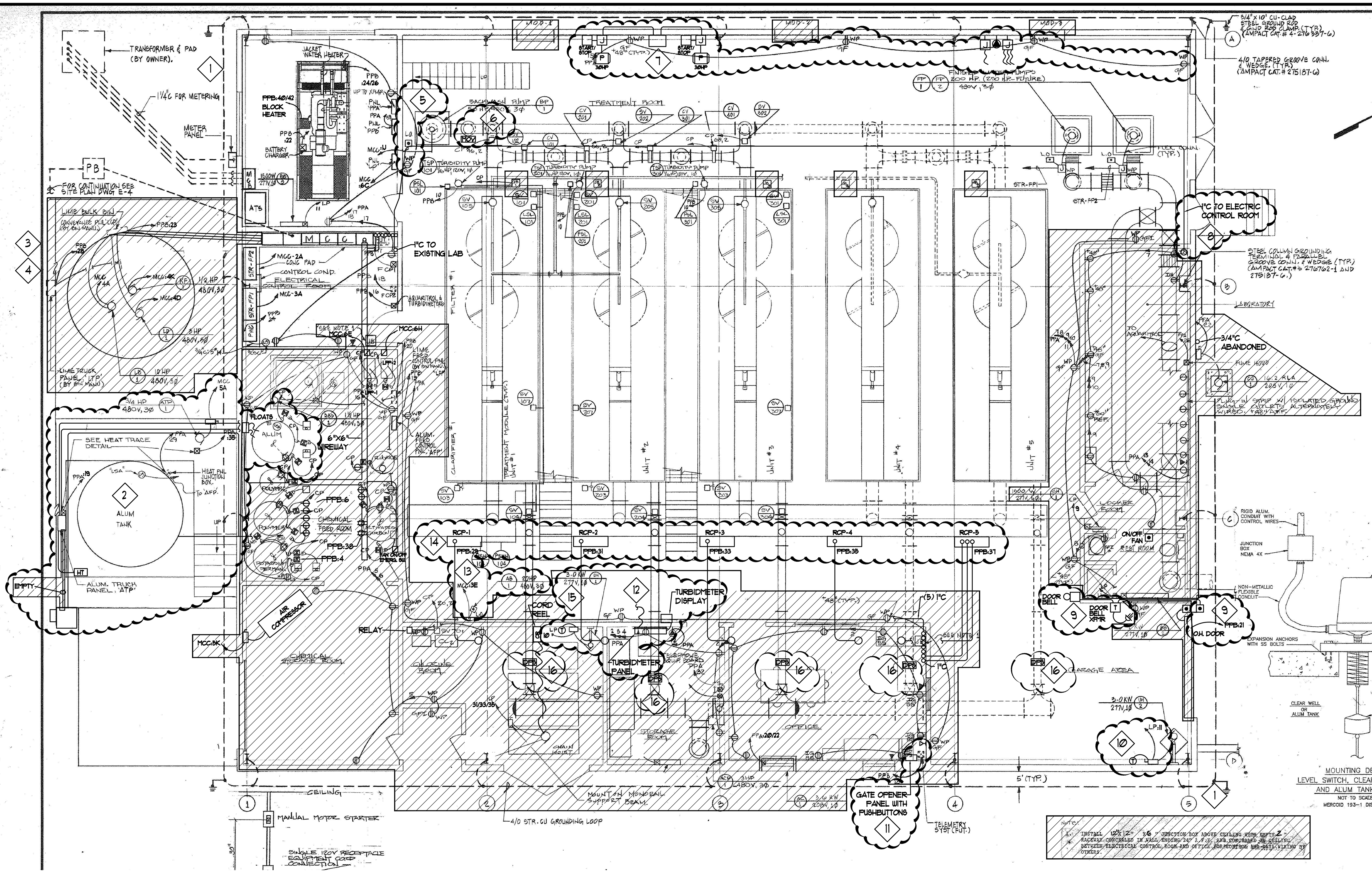
NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	RJK
APPROVED BY	GEL

S6001

SHEET 24 OF 39

W:\PROJECTS\CNEW\CNEW1612-Curtis WTP Improvements\DESIGN_PUBLISHS6001.dwg PLOTTED: 11/2/2017 11:22 AM, BY: David S. Bolek PLOTSTYLE: PASW.ctb PROJECT STATUS: DRAFT



POWER DEMOLITION PLAN - GROUND FLOOR
SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'

FOR GENERAL DEMOLITION NOTES SEE DRAWING DM1001

IN ADDITION TO GENERAL DEMOLITION NOTES ON DRAWING DE1001, CARE MUST BE TAKEN TO PROTECT EXISTING TREATMENT EQUIPMENT IN THE AREA WHICH WILL REMAIN IN SERVICE.

SPECIFIC DEMOLITION NOTES

1. EXISTING 4/0 BUILDING GROUND LOOP AND BONDING JUMPERS TO BUILDING STEEL ARE TO REMAIN UNDISTURBED
2. EXISTING EXTERIOR ALUM TANK, INTERIOR ALUM STORAGE TANK, ALUM TRANSFER PUMP (ATP-1), ALUM TRUCK PANEL 'ATP', HEAT TRACING, AND CHEMICAL FEED PUMPS ARE TO REMAIN IN PLACE. EMPTY CONDUIT SHOWN IS ABANDONED IN PLACE AND SHALL BE REMOVED.
3. REMOVE LIME BLOWER (LB-1), LIME BIN DISCHARGER (LD-1), AND ROTARY FEEDER (RF-1) COMPLETE BACK TO MCC. NO NEW CONDUIT SHALL PENETRATE FROM MCC THROUGH NEW WALLS IN THIS AREA.
4. REMOVE LIME BULK BIN CONVEYANCE PANEL (LCP) AND LIME TRUCK PANEL (LTP) COMPLETE BACK TO PANEL PPB. NO NEW CONDUIT SHALL PENETRATE FROM PANEL PPB THROUGH NEW WALLS IN THIS AREA.
5. REMOVE PUSHBUTTON FOR BACKFLOW PUMP AND RECEPTACLE FROM WALL TO ALLOW FOR WALL RENOVATION. PUSHBUTTON AND RECEPTACLE SHALL BE RE-MOUNTED AFTER CONSTRUCTION OF NEW WALL.
6. EXISTING MOTOR OPERATED VALVE (MOV) SHALL REMAIN IN PLACE AND RE-FED IN NEW WORK.
7. REMOVE (2) PUSHBUTTON START/STOP BUTTONS AND (3) JUNCTIONS BOXES FOR 2-30HP MOTOR AIR BLOWER, (2) JUNCTION BOXES AND RECEPTACLE AT CLEAR WELL, AND (4) RECEPTACLES TO ALLOW DEMOLITION/CONSTRUCTION OF NEW EXTERIOR WALL. All DEVICES WILL BE RE-MOUNTED TO NEW STRUT SUPPORT IN APPROXIMATE LOCATION IN NEW WORK. SEE DWG E1001 FOR NEW DEVICE LOCATIONS
8. REMOVE CONDUCTORS IN 1" CONDUIT. CONDUIT SHALL REMAIN FOR REUSE IN NEW WORK.
9. REMOVE DOOR BELL, TRANSFORMER, AND EXTERIOR BELL FROM WALLS TO ALLOW RENOVATION OF WALLS AND SIDING, EQUIPMENT WILL BE RELOCATED IN NEW WORK. REMOVE EXISTING OVERHEAD DOOR, RETAIN CIRCUIT PPB:21 FOR REUSE IN NEW WORK.
10. REMOVE EXISTING T-STAT FROM EXTERIOR WALL. T-STAT WILL RELOCATED IN NEW WORK.
11. REMOVE GATE OPERATOR PANEL WITH PUSH BUTTONS, PANEL TO BE RELOCATED ION NEW WORK PLAN. REMOVE COMM CABLE TO PANEL AND COAX TV PANEL AND COIL FOR RELOCATION IN NEW WORK.
12. REMOVE TURBIDMETER PANEL AND DISPLAY TO ALLOW DEMOLITION OF WALL. PANEL AND DISPLAY WILL BE RELOCATED IN NEW WORK PLAN.
13. REMOVE PUSHBUTTON FOR AIR SCOUR BLOWER TO ALLOW FOR DEMOLITION OF WALL. PUSHBUTTON WILL BE RELOCATED IN NEW WORK PLAN.
14. REMOVE CIRCUIT AND CONDUIT BACK TO VERTICAL RISER FOR RCP-1,2,3,4,&5. CIRCUIT AND CONDUIT WILL BE RE-ROUTED IN NEW WORK PLAN.
15. UH-1 AND THERMOSTAT TO BE RELOCATED IN NEW WORK PLAN. SEE DWG. E1001
16. RAW WATER DIFFERENTIAL FLOW METERS MOUNTED ON EXISTING OFFICE AND STORAGE CEILING NEAR ALONG INDIVIDUAL RAW WATER FILTER INTAKES ARE TO REMAIN. SUSPEND FLOW METER FROM STRUCTURAL STEEL AND REWORK CONDUIT AND WIRING AS NECESSARY. TYPICAL FOR (5) METERS.

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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JAMES E. CARDONA, LICENSE No. 6304, DELAWARE PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

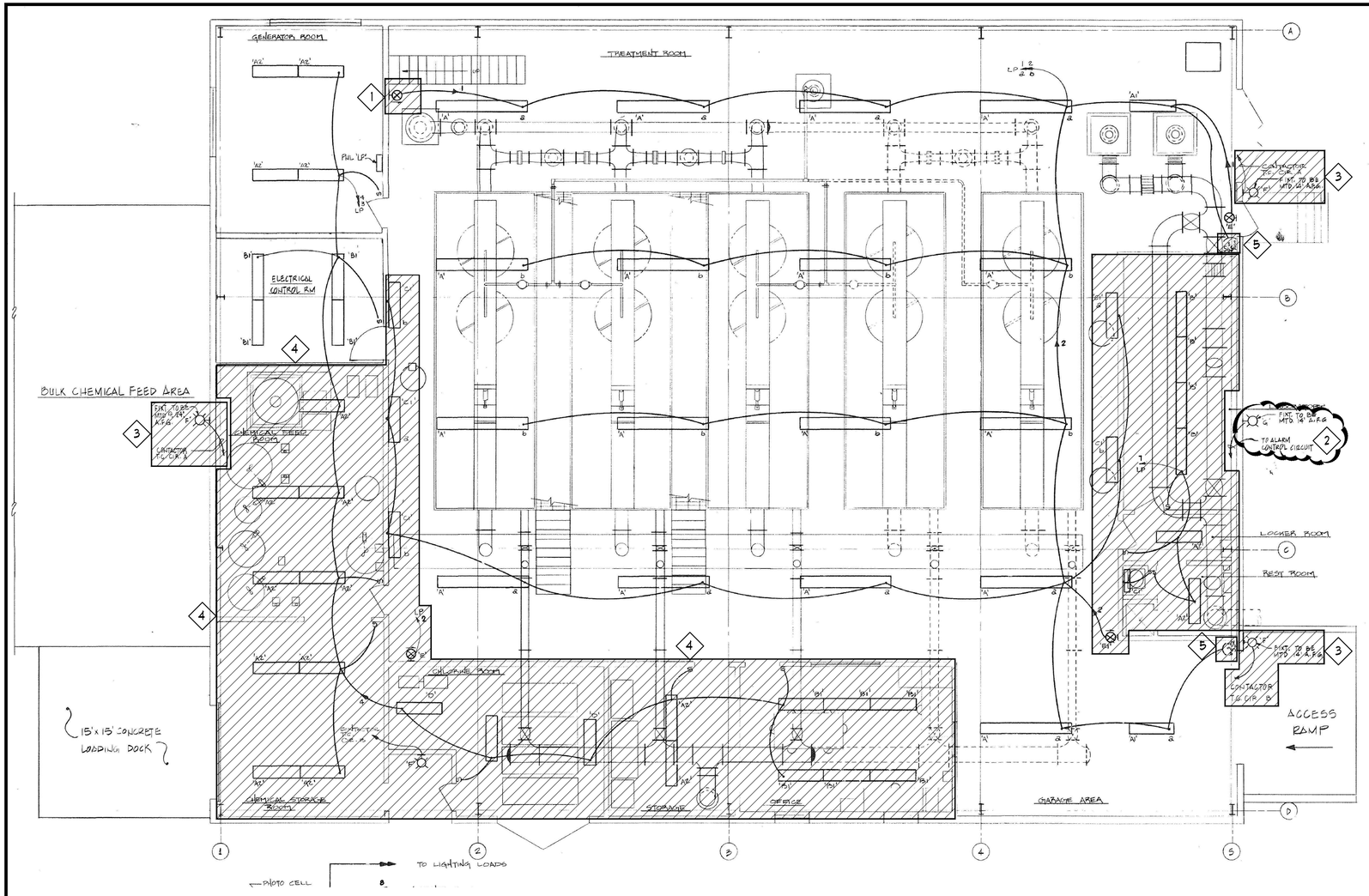
POWER DEMOLITION PLAN GROUND FLOOR

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	DAP
APPROVED BY	DVH

DE1001



1 LIGHTING DEMOLITION PLAN - GROUND FLOOR
SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'

SPECIFIC DEMOLITION NOTES

1. REMOVE EXIT SIGN, CIRCUITING, CONDUIT, SUPPORTS, ETC IN IT'S ENTIRETY FROM WALL BACK TO SOURCE TO ALLOW DEMOLITION AND CONSTRUCTION OF NEW WALL.
2. REMOVE OUTDOOR ALARM STROBE FIXTURE. REWORK/RELOCATE FIXTURE, CIRCUIT, AND CONDUIT AS NECESSARY TO ALLOW REMOVAL OF SIDING. FIXTURE SHALL BE RE-MOUNTED IN NEW WORK.
3. REMOVE OUTDOOR LIGHT FIXTURE. REMOVE CIRCUIT AND CONDUIT BACK TO BUILDING INTERIOR TO ALLOW REMOVAL OF SIDING. SEE DWG. EL1Ø0I (NEW WORK) FOR NEW FIXTURE LOCATIONS.
4. RETAIN (11) "TYPE A2" 4' GASKETED FIXTURES FOR REUSE IN NEW WORK.
5. REMOVE LIGHT SWITCH, SWITCH LEG, AND CONDUIT FROM WALL. COIL AND STORE SWITCH LEG FOR REUSE IN NEW WORK PLAN. SEE DWG. EL1Ø0I (NEW WORK) FOR NEW LIGHT SWITCH LOCATIONS.

DEMOLITION LEGEND:

COMPLETELY DISMANTLE & REMOVE ALL DEVICES, WIRING, CONDUIT, SUPPORTS, ETC. WITHIN HATCHED CLOUDS BACK TO SOURCE.

GENERAL ELECTRICAL DEMOLITION NOTES:

1. CONTRACTOR TO VERIFY ALL FIELD CONDITIONS, CIRCUIT ROUTING , SIZES , REMOVAL AND DISPOSAL METHODS PRIOR TO BEGINNING THE DEMOLITION WORK. COORDINATE DEMOLITION AND TIMING WITH CONSTRUCTION MANAGER AND OWNER PRIOR TO BEGINNING WORK.
2. GENERAL CONTRACTOR IS RESPONSIBLE TO REMOVE FROM BUILDING SITE DEBRIS, TRASH, AND OTHER DISCARDED MATERIALS AND/OR EQUIPMENT RESULTING FROM DEMOLITION OPERATIONS. TRANSPORT AND LEGALLY DISPOSE OFF SITE.
3. IF HAZARDOUS MATERIALS ARE ENCOUNTERED DURING DEMOLITION OPERATIONS, COMPLY WITH APPLICABLE REGULATIONS, LAWS, AND ORDINANCES CONCERNING REMOVAL, HANDLING, AND PROTECTION AGAINST EXPOSURE OR ENVIRONMENTAL POLLUTION.
4. COORDINATE ALL DEMOLITION WITH OWNER AND OTHER TRADES. CONFIRM THE EXTENT, TIMING, AND ITEMS TO BE SALVAGED WITH OWNER. CONTRACTOR SHALL SCHEDULE WORK, TO LIMIT OVERALL OPERATIONAL DOWNTIME.
5. DURING DEMOLITION ALL UNUSED HANGERS, STRAPS, ANCHORS AND SUPPORTS SHALL BE REMOVED. CONDUIT LEFT UNUSED OR ABANDONED IN PLACE SHALL BE REMOVED.
6. ALL REMOVED EQUIPMENT (I.E. FANS, CONDENSING UNITS, COILS, ETC.) SHALL BE DISPOSED OF PROPERLY ACCORDING TO THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
7. ALL EXISTING UNUSED CONDUIT AND SLEEVE PENETRATIONS THROUGH WALLS, FLOORS, PLATFORMS OR ROOFS SHALL BE PATCHED TO MATCH EXISTING FINISHES.
8. CARE MUST BE TAKEN TO PROTECT EXISTING TREATMENT EQUIPMENT IN THE AREA WHICH WILL REMAIN IN SERVICE.

RCP AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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JAMES TARQUINIA LEE LICENSE No. 6304 PROFESSIONAL ENGINEER DELAWARE

CURTIS WATER TREATMENT PLANT
IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE
CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
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LIGHTING DEMOLITION GROUND FLOOR PLAN

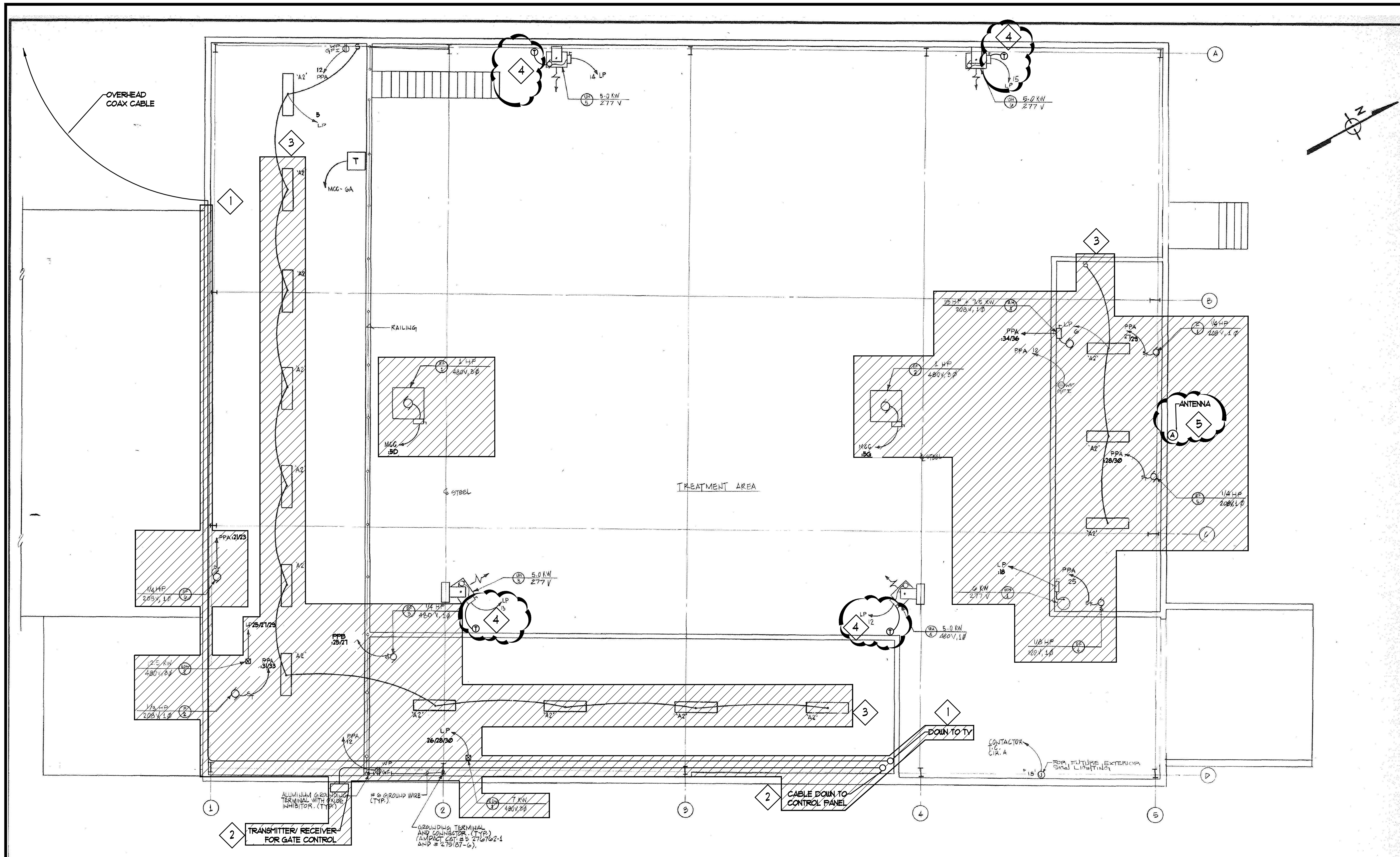
BY	REVISIONS	NO.	DATE

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	DAP
APPROVED BY	DVH

DE1002

SHEET 26 OF 54

W:\PROJECTS\CNEW\CNEW1612\Curtis WTP Improvements\DESIGN\E\Electrical Demolition Background.dwg PLOTTED: 4/12/2017 1:29 PM, BY: Brian Miller PLOTSTYLE: NCYW.ctb PROJECT STATUS: CONSTRUCTION PLANS



1 LIGHTING/POWER DEMOLITION PLAN - PLATFORM
SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'

SPECIFIC DEMOLITION NOTES

1. REMOVE COAX CABLE FROM EXISTING TV BACK TO BUILDING PENETRATION. COIL CABLE AND STORE FOR REUSE IN NEW WORK.
2. REMOVE GATE CONTROL CABLE BACK TO EXISTING TRANSMITTER/RECEIVER. REMOVE/RELOCATE TRANSMITTER/RECEIVER AS NEEDED TO ALLOW REMOVAL/ CONSTRUCTION OF NEW BUILDING SIDING. TRANSMITTER/RECEIVER WILL BE REMOUNTED IN NEW WORK
3. RETAIN (13) "TYPE A2" 4' GASKETED FIXTURES FOR REUSE IN NEW WORK
4. RELOCATE EXISTING T-STAT IN SPACE BELOW FOR UNIT HEATER - SEE DWG. EP1001 (NEW WORK) FOR NEW LOCATIONS
5. REMOVE ANTENNA FROM BUILDING EXTERIOR TO ALLOW FOR REMOVAL/CONSTRUCTION OF BUILDING SIDING. ANTENNA TO BE RE-MOUNTED AFTER SIDING CONSTRUCTION IS COMPLETE

FOR GENERAL DEMOLITION NOTES SEE DRAWING DE1001

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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JAMES E. TARDONA LICENSE No. 6304 DELAWARE PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

POWER&LIGHTING DEMO PLATFORM

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	DAP
APPROVED BY	DVH

DE1003

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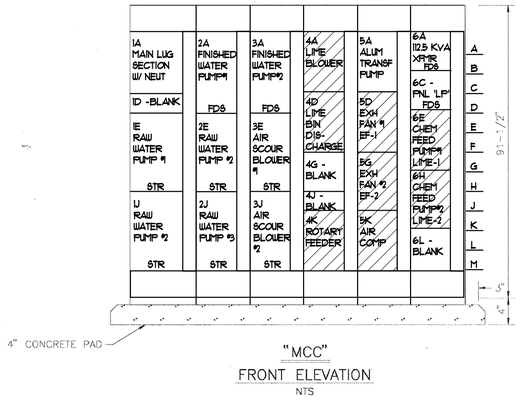

"MCC"
FRONT ELEVATION
NTS

BRANCH CIRCUIT SCHEDULE

BC1	– 3"C:3#500 MCM & #2 GR.
BC1A	– 3"C:3#500 MCM & #2 GR.
BC2	– 1-1/2"C:3#4 & #8 GR.
BC3	– 3/4"C:3#8 & #10 GR.
BC4	– 3/4"C:3#12 & #12 GR.
BC5	– 2"C:3#1/0 & #6 GR.
BC5A	– 2-1/2"C:7#1/0 & #2 GR.
BC6	– 2-1/2"C:4#3 & #8 GR.

1 POWER DEMOLITION PLAN - SINGLE LINE
SCALE : NONE
0 1' 2' 4' 8'

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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CURTIS WATER TREATMENT PLANT
IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE
SINGLE LINE DIAGRAM DEMOLITION
CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	DAP
APPROVED BY	DVH

DE1004

SHEET 28 OF 54

W:\PROJECTS\CNEW\CNEW1612-Curtis WTP Improvements\DESIGN\Electrical Demolition Background.dwg PLOTTED: 4/12/2017 2:29 PM BY: Brian Miller PLOTSTYLE: NCYH.ctb PROJECT STATUS: CONSTRUCTION PLANS

LAST UPDATED 1/13/17

Panel PPA — Curtis Water Treatment Plant

VOLTS: 208Y/120 | PHASE: 3 | WIRE: 4 | Demo (CNEW-1612) Curtis Water Plant | ? A BUS | ? A MCB | FLOOR: ?? | ROOM: ? | FED FROM : MCC ckt 6A via 112.5KVA Transformer 'T1' | Surf/Flush mounted | Manuf: Cutler Hammer / EATON

CKT No	DESIGNATION	BRANCH WIRING	C.B. AMPS	LOAD VA	PH	LOAD VA	C.B. AMPS	BRANCH WIRING	DESIGNATION	CKT No
1	Recept: Treatment room		20		A		20		IG Office	2
3	Recept: Office		20		B		20		Recept: Storage Rm	4
5	Recept: Chlorine		20		C		20		Recept: Chemical Storage	6
7	Recept: Lab, Tur Meters, & Rec		20		A		20		Recept:Lab	8
9	Recept: Lab, Locker Rm		20		B		20		Ref Lab	10
11	Recept: Treatment Rm		20		C		20		Recept: Storage & Mezz, Telephone	12
13	Plugmold Lab		20		A		20		Plugmold Lab	14
15	Recept: Treatment Rm		20		B		20		Recept: Chemical Rm	16
17	Recept: Elec Control Rm		20		C		20		Recept: Generator Rm	18
19	Heat Trace Alum Tank		20		A					20
21	EF-6		15		B		30		AC-1 Office AC/Heater	22
23					C					24
25	EF-4		20		A		20		Fume Hood	26
27	F-1		15		B		30		AC-1 Office AC/Heater	28
29					C					30
31	F-2		15		A		15		Lights, recpt, wet well	32
33					B		50		AH-1	34
35	Heat Trace Alum Tank		20		C					36
37	CU-1		40		A					38
39					B		100		Panel PPB	40
41	Heat Trace Alum Tank		15		C					42

ITALICS DENOTES ESTIMATED.

Pennoni — PENNONI ASSOCIATES INC. CONSULTING ENGINEERS

Connected VA	Connected Amps	Measured VA	Measured Amps	
				A
				B
				C

Source Feeder CB/Fuse size :
Feeder cable size :
Branch C.B's min Isc (sym) :
One Line Diagram Dwg. #

Shaded Areas Indicates - Demolition | Total | Date read

FAX Changes to Panel Directory to Pennoni : (302) 234 - 4610

CNEW1612 - PPA.xlsx | Page 1 of 1

LAST UPDATED 1/13/17

Panel PPB — Curtis Water Treatment Plant

VOLTS: 208Y/120 | PHASE: 3 | WIRE: 4 | Demo (CNEW-1612) Curtis Water Plant | ? A BUS | ? A MLO | FLOOR: ?? | ROOM: ? | FED FROM : Panel 'PPA' ckts 38/40/42 | Surf/Flush mounted | Manuf: Cutler Hammer / EATON

CKT No	DESIGNATION	BRANCH WIRING	C.B. AMPS	LOAD VA	PH	LOAD VA	C.B. AMPS	BRANCH WIRING	DESIGNATION	CKT No
1	Mixer Alum & Polymer		20		A		20		Mixer Polymer & Potassium Permanganate	2
3	Mixer Activated Carbon		20		B		20		CFP POT 1&2	4
5	CFP-AC 1&2		20		C		20		CFP P1, P2 & FUT Polymer Pumps	6
7	BLANK		20		A		20		PWC (Turn off to Adj Float)	8
9	CFP-F 1&2		20		B		20		MCP	10
11	Motorized Valves Unit #1		20		C		20		Motorized Valves Unit #2	12
13	Motorized Valves Unit #3		20		A		20		Motorized Valves Unit #4	14
15	Motorized Valves Unit #5		20		B		20		Cp Panel	16
17	Telemetry System		20		C		20		Aquaritrol & FWEP (Hand Held Contr.)	18
19	AFP 3-way Alum Valve		20		A		30		LFP Lime Panel - Auger	20
21	Motor Operated Door		20		B		20		Battery Charger	22
23	LCP		20		C		20		Jacket Heater	24
25	EF-3 Chlorine Exhaust		20		A					26
27					B		20		LTP	28
29	RCP-1		20		C		20		Chlorine Pump Treatment Rm	30
31	RCP-2		20		A					32
33	RCP-3		20		B		20		BLANK	34
35	RCP-4		20		C					36
37	RCP-5		20		A		20		Honeywell Panel	38
39	Sewer Lift Pump		20		B				Block Heater	40
41	Sewer Alarm		15		C		30			42

ITALICS DENOTES ESTIMATED.

Pennoni — PENNONI ASSOCIATES INC. CONSULTING ENGINEERS

Connected VA	Connected Amps	Measured VA	Measured Amps	
				A
				B
				C

Source Feeder CB/Fuse size : 100A
Feeder cable size :
Branch C.B's min Isc (sym) :
One Line Diagram Dwg. #

Shaded Areas Indicates - Demolition | Total | Date read

FAX Changes to Panel Directory to Pennoni : (302) 234 - 4610

CNEW1612 - PPB.xlsx | Page 1 of 1

LAST UPDATED 1/13/17

Panel LP — Curtis Water Treatment Plant

VOLTS: 480Y/277 | PHASE: 3 | WIRE: 4 | Demo (CNEW-1612) Curtis Water Plant | 225 A BUS | 225 A MLO | FLOOR: FIRST | ROOM: ELECTRIC | FED FROM : MCC ckt 6A | Surf/Flush mounted | Manuf: Cutler Hammer / EATON type PH

CKT No	DESIGNATION	BRANCH WIRING	C.B. AMPS	LOAD VA	PH	LOAD VA	C.B. AMPS	BRANCH WIRING	DESIGNATION	CKT No
1	Lights: Treatment Rm. W. Side		20		A		20		Lights: Treatment Rm Center	2
3	Lights: Chem Stor, Chem treatment, ECR		20		B		20		Lights: Chlor, Office, Storage	4
5	Lights: Storage Area		20		C		20		Lights: Mezz, Storage Area	6
7	Lab Lights		20		A		20		Outside Lights ViaTime Clock in ECR	8
9	Heater, Lab		20		B		20		Unit Heater UH-1	10
11	UH-2		20		C		20		Unit Heater UH-4	12
13	UH-3		30		A		30		Unit Heater UH-5	14
15	UH-6		30		B				BLANK	16
17	BLANK				C		30		Water Heater	18
19					A		20		Baseboard Heaters	20
21			20		B				BLANK	22
23					C				BLANK	24
25					A					26
27	Duct Heater Chemical Room		20		B		15		Duct Heater Chlorine Room	28
29					C					30
31					A					32
33	Hoist Chlorine room		15		B		15			34
35					C					36

ITALICS DENOTES ESTIMATED.

Pennoni — PENNONI ASSOCIATES INC. CONSULTING ENGINEERS

Connected VA	Connected Amps	Measured VA	Measured Amps	
				A
				B
				C

Source Feeder CB/Fuse size : 100A
Feeder cable size :
Branch C.B's min Isc (sym) :
One Line Diagram Dwg. #

Shaded Areas Indicates - Demolition | Total | Date read

FAX Changes to Panel Directory to Pennoni : (302) 234 - 4610

CNEW1612 - LP.xlsx | Page 1 of 1

1 POWER DEMOLITION PLAN - PANEL SCHEDULES

SCALE : NONE

0 1' 2' 4' 8'

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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121 Continental Drive, Suite 207
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T 302.655.4451 F 302.654.2895

ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

JAMES E. HARDCASTLE — LICENSE — No. 6304 — PROFESSIONAL ENGINEER — DELAWARE

CURTIS WATER TREATMENT PLANT IMPROVEMENTS
DEMOLITION - PANEL SCHEDULES
CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
215 PAPER MILL ROAD, NEWARK, DELAWARE
220 SOUTH MAIN STREET, NEWARK, DELAWARE 19711

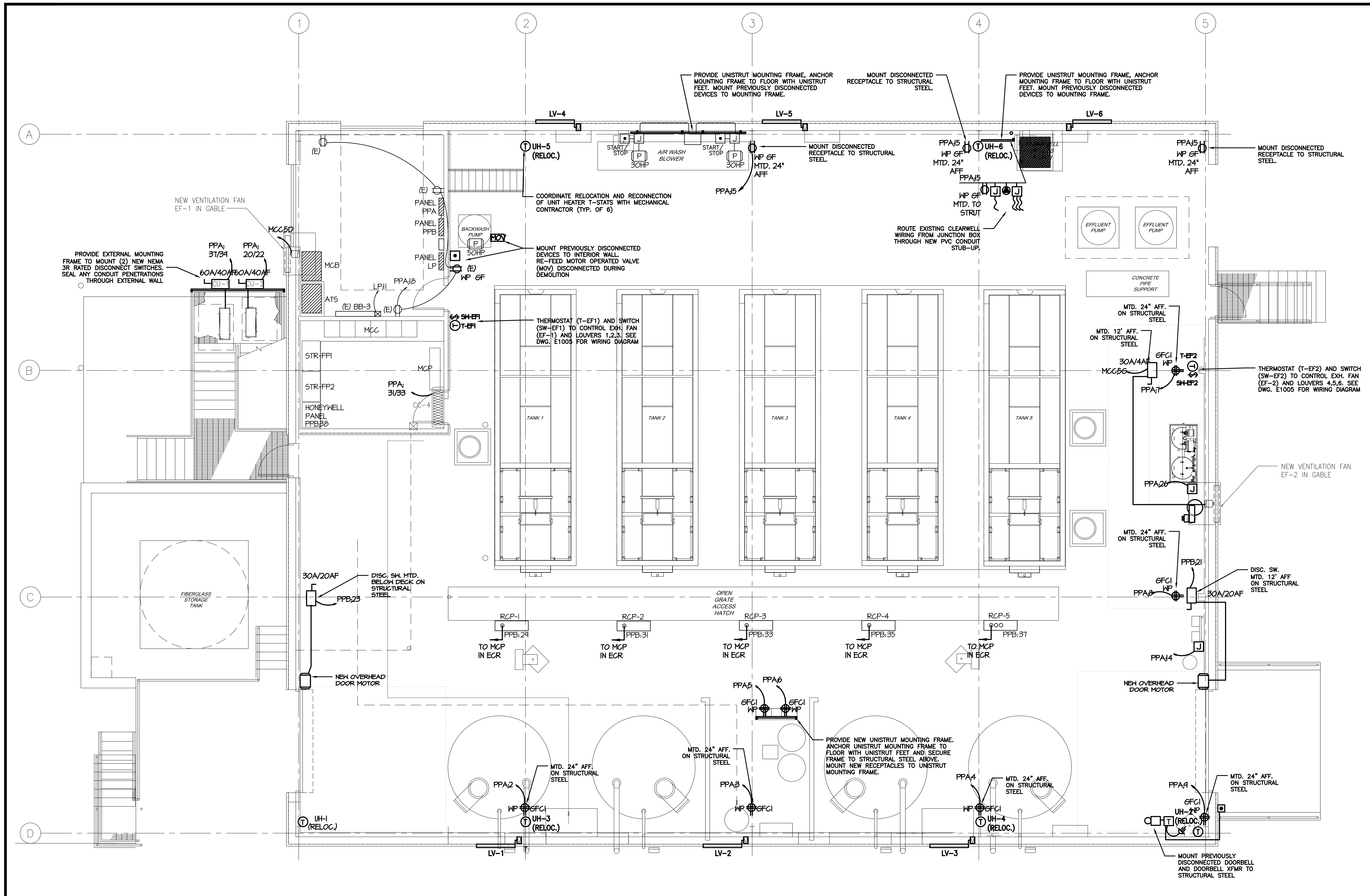
DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	DAP
APPROVED BY	DVH

DE1005

SHEET 29 OF 54

W:\PROJECTS\CNEW\CNEW1612-Curtis WTP Improvements\DESIGN\E\Electrical Demolition Background.dwg PLOTTED: 4/12/2017 3:29 PM By: Brian Miller PLOTSTYLE: NCW.ctb PROJECT STATUS: CONSTRUCTION PLANS



1 POWER NEW WORK PLAN - GROUND FLOOR
SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'

POWER PLAN SYMBOLS

- 30A/4AF — NEMA 2 RATED DISCONNECT SWITCH, SWITCH SIZE/FUSE SIZE OR NON-FUSED (NF)
- KG1 — 2-POLE MANUAL SWITCH
- DUPLEX RECEPTACLE
- QUAD RECEPTACLE
- SPECIAL PURPOSE RECEPTACLE
- PUSHBUTTON
- DATA OUTLET
- J — JUNCTION BOX
- MOTOR
- T — THERMOSTAT
- $ — SINGLE POLE SWITCH
- WIREMOLD

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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JAMES E. TARDONA, LICENSE No. 6304, DELAWARE PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

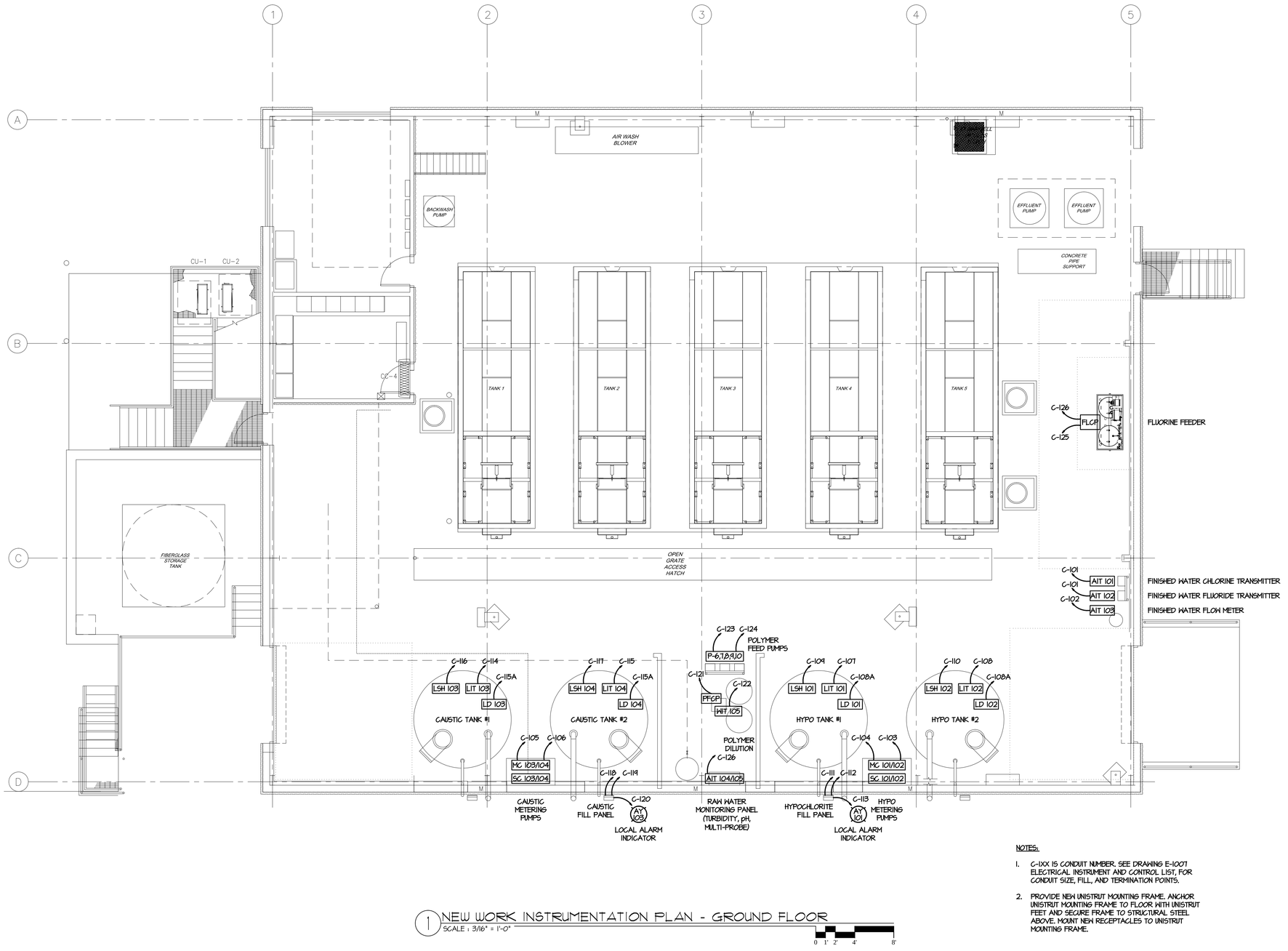
POWER NEW WORK GROUND FLOOR

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	DAP
APPROVED BY	DVH

E1001



1 NEW WORK INSTRUMENTATION PLAN - GROUND FLOOR
SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'

NOTES:

1. C-1XX IS CONDUIT NUMBER. SEE DRAWING E-1001 ELECTRICAL INSTRUMENT AND CONTROL LIST, FOR CONDUIT SIZE, FILL, AND TERMINATION POINTS.
2. PROVIDE NEW UNISTRUT MOUNTING FRAME. ANCHOR UNISTRUT MOUNTING FRAME TO FLOOR WITH UNISTRUT FEET AND SECURE FRAME TO STRUCTURAL STEEL ABOVE. MOUNT NEW RECEPTACLES TO UNISTRUT MOUNTING FRAME.

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE
INSTRUMENTATION NEW WORK
CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

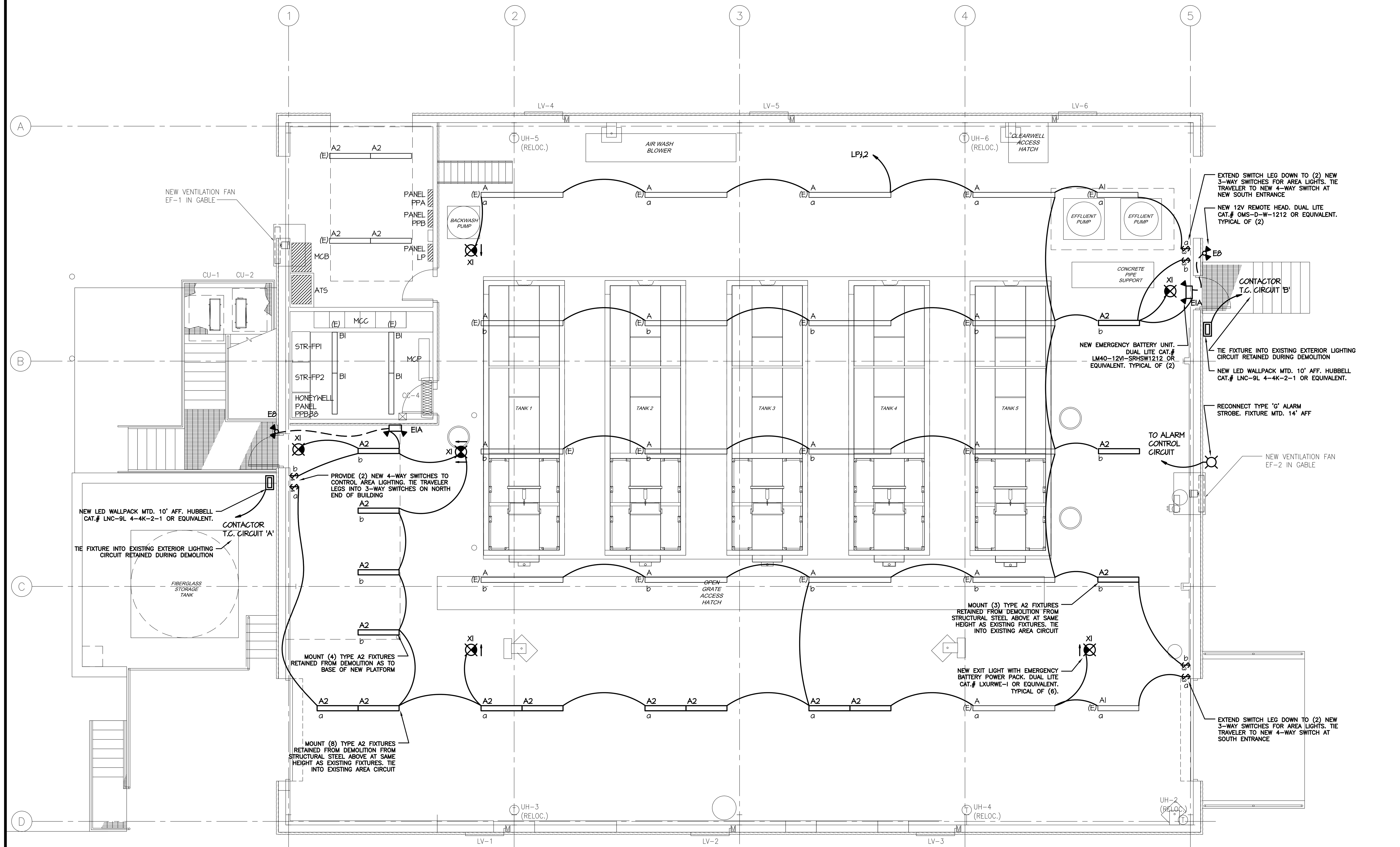
	BY	REVISIONS	NO.	DATE

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	DAP
APPROVED BY	DVH

E1002

SHEET 31 OF 54

W:\PROJECTS\CNEW\CNEW1612\Curtis WTP Improvements\DESIGN\ELEC\NEW WORK.dwg PLOTTED: 4/12/2017 3:39 PM BY: Brian Miller PLOTSTYLE: NCYN.ctb PROJECT STATUS: CONSTRUCTION PLANS



LIGHTING PLAN SYMBOLS

- 2' X 2' GRID MTD. LED FIXTURE
- WALL MOUNTED FIXTURE
- $3 THREE WAY SWITCH
- $4 FOUR WAY SWITCH
- MD AUTOMATIC WALL SWITCH
- EXIT SIGN - ONE SIDED
- EMERGENCY BATTERY UNIT
- EMERGENCY 2-HEAD REMOTE HEADS

1 LIGHTING NEW WORK PLAN - GROUND FLOOR
SCALE : 3/16" = 1'-0"

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

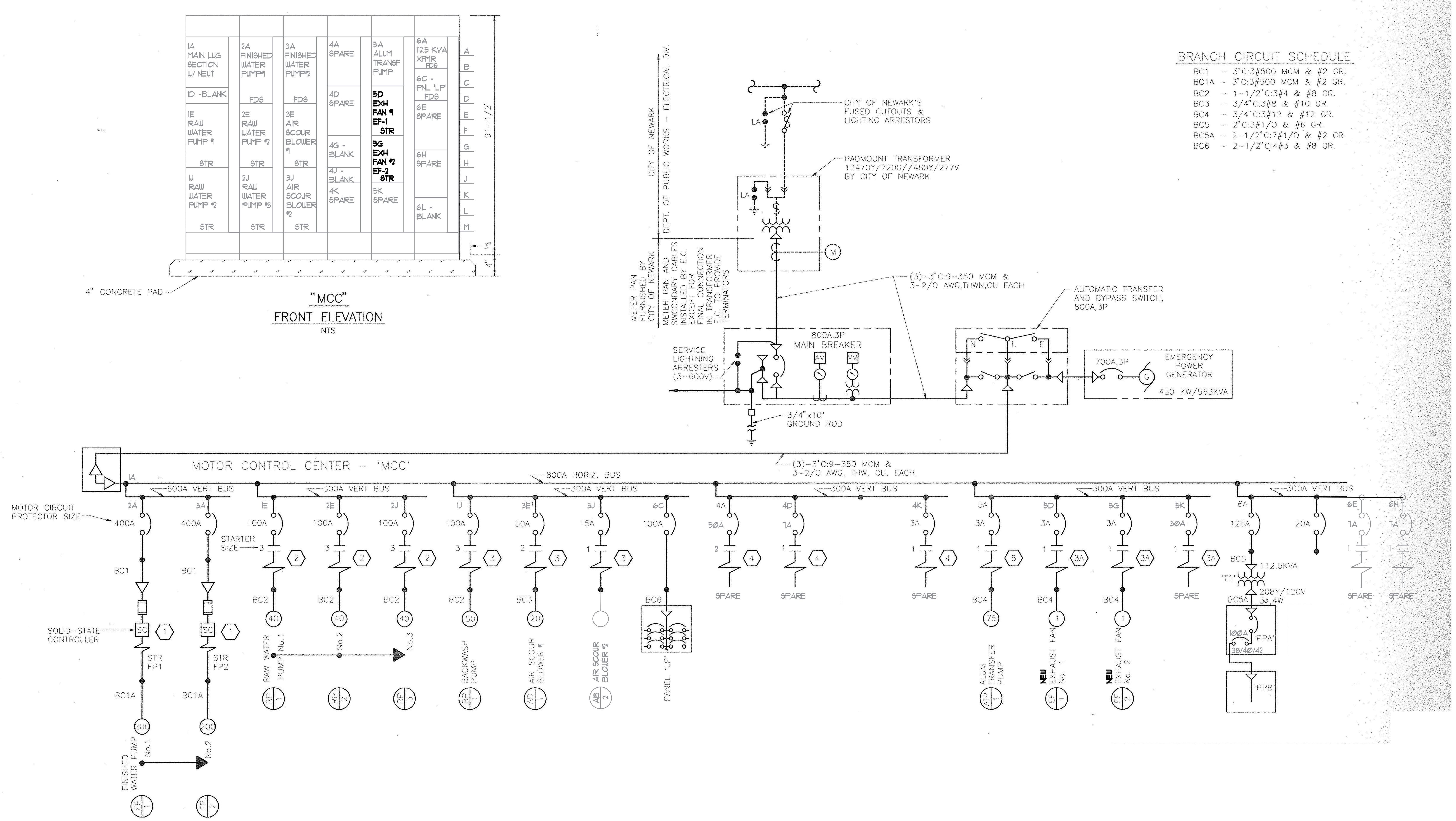
LIGHTING NEW WORK GROUND FLOOR

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	DAP
APPROVED BY	DVH

E1003



BRANCH CIRCUIT SCHEDULE

BC1 – 3"C:3#500 MCM & #2 GR.
BC1A – 3"C:3#500 MCM & #2 GR.
BC2 – 1-1/2"C:3#4 & #8 GR.
BC3 – 3/4"C:3#8 & #10 GR.
BC4 – 3/4"C:3#12 & #12 GR.
BC5 – 2"C:3#1/0 & #6 GR.
BC5A – 2-1/2"C:7#1/0 & #2 GR.
BC6 – 2-1/2"C:4#3 & #8 GR.

(1) POWER NEW WORK - SINGLE LINE
SCALE : NONE

0 1' 2' 4' 8'

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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JAMES E. TARDONA LICENSE No. 6304 DELAWARE PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

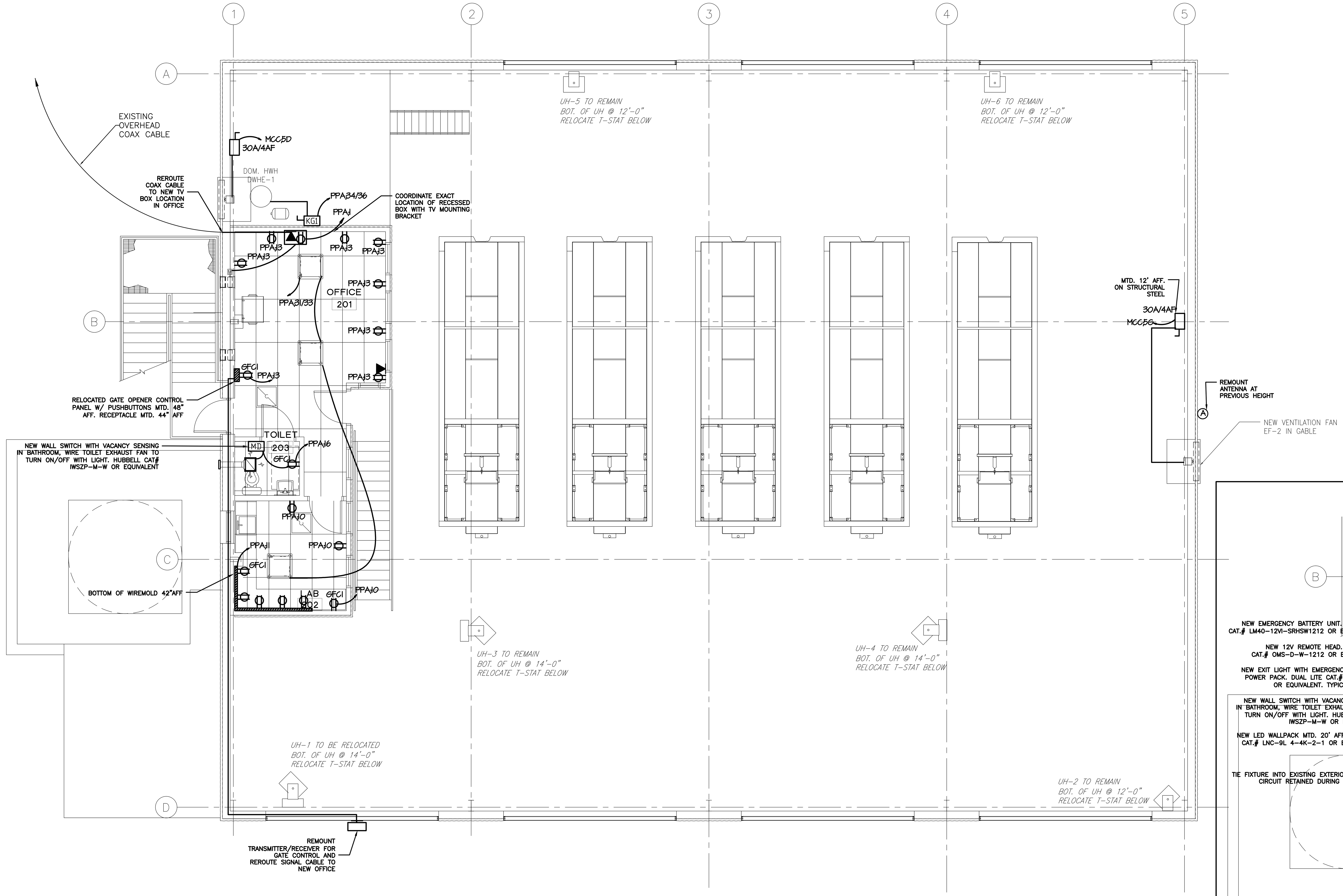
SINGLE LINE DIAGRAM NEW WORK

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

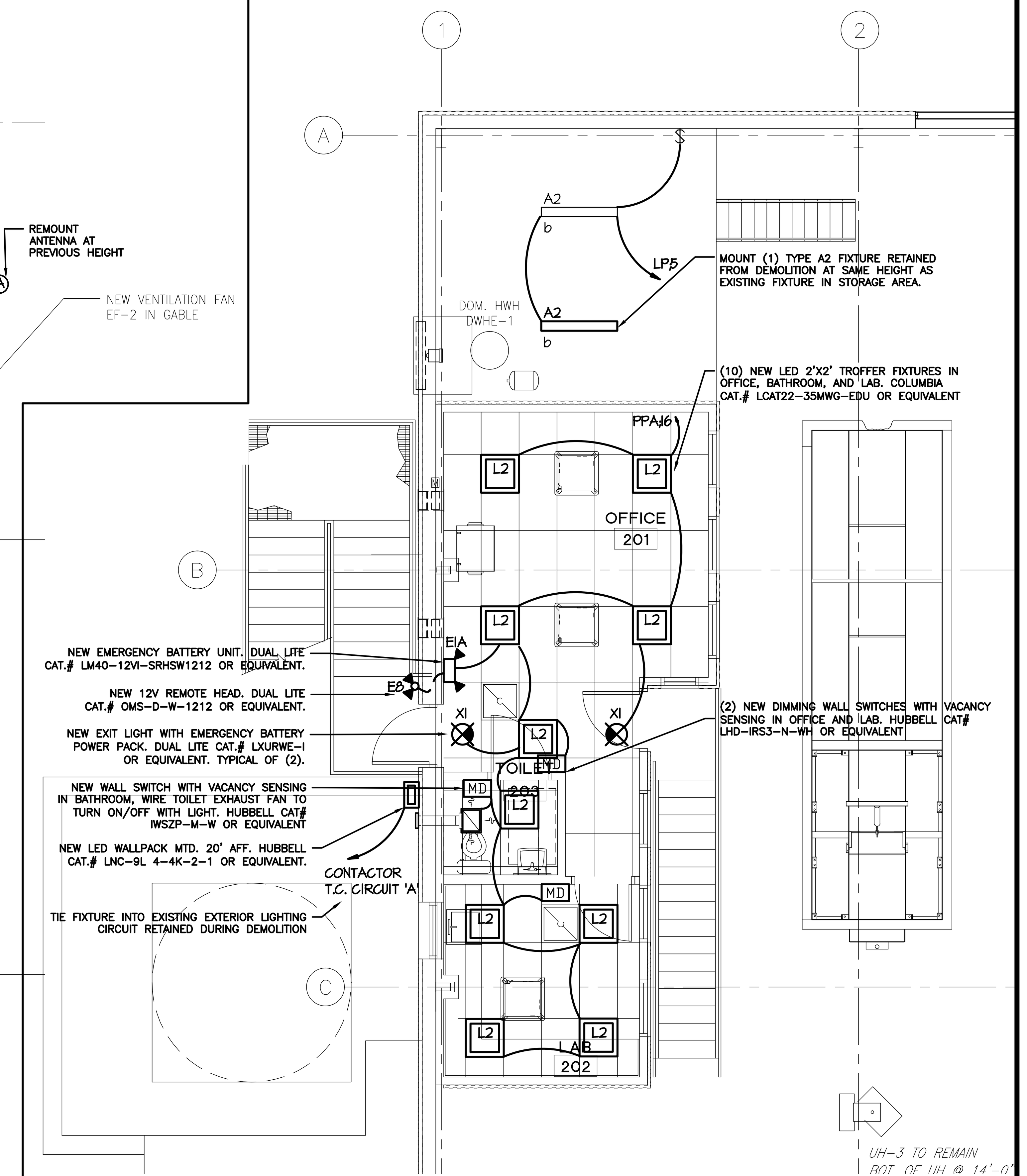
DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	DAP
APPROVED BY	DVH

E1004



1 POWER NEW WORK PLAN - PLATFORM
SCALE : 3/16" = 1'-0"



2 LIGHTING NEW WORK PLAN - PLATFORM
SCALE : 3/16" = 1'-0"

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

POWER & LIGHTING NEW WORK

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	DAP
APPROVED BY	DVH

E1005

Panel PPA — Curtis Water Treatment Plant

LAST UPDATED 1/20/17

VOLTS: 208Y/120 | PHASE: 3 | WIRE: 4 | New Work (CNEW-1612) Curtis Water Plant

?A BUS | FLOOR: ?? | ROOM: ?

?A MCB | FED FROM : MCC ckt 6A via 112.5KVA Transformer 'T1'

Surf/Flush mounted | Manuf: Cutler Hammer / EATON

CKT No	DESIGNATION	BRANCH WIRING	C.B. AMPS	LOAD VA	PH	LOAD VA	C.B. AMPS	BRANCH WIRING	DESIGNATION	CKT No
1	Recept: Office 201 TV & ERV in wall	2#12 & 12g	20		A		20	2#12 & 12g	Recept: South East Quad	2
3	Recept: East Quad	2#12 & 12g	20		B		20	2#12 & 12g	Recept: Northeast Quad, Pump Skid	4
5	Recept: Quad, LMI Pumps	2#12 & 12g	20		C		20	2#12 & 12g	Recept: Quad, LMI Pumps	6
7	Recept: Northwest Quad	2#12 & 12g	20		A		20	2#12 & 12g	Recept: North Quad	8
9	Recept: Northeast Quad	2#12 & 12g	20		B		20	2#12 & 12g	Recepts: Lab 202 Fridge & Convenience	10
11	Recepts: Lab 202 Wiremold	2#12 & 12g	20		C		20		Recept: Storage & Mezz, Telephone	12
13	Recepts: Office 201 Convenience	2#12 & 12g	20		A		20	2#12 & 12g	J-Box: North Pump Equipment	14
15	Recept: Treatment Rm		20		B		20	2#12 & 12g	Recept: Toilet 203, Exhaust Fan, Lights 201,202,203	16
17	Recept: Elec Control Rm		20		C		20		Recept: Generator Rm	18
19	Heat Trace Alum Tank		20		A					20
21	SPARE (Replace existing 30A/2P CB with 35A/2P CB)		15		B	35	2#6 & 10g		Disconnect Switch: Condensing Unit #2 (CU-2)	22
23					C		20		Day Tank	24
25	SPARE		20		A		20	2#12 & 12g	J-Box: North Process Equipment	26
27	SPARE		15		B					28
29					C		30		SPARE	30
31	Ceiling Cassette Units: 201,202,203, & ECR	2#12 & 12g	15		A		15		Lights, recpt, wet well	32
33					B			2#6 & 10g	Hot Water Heater DWHE-1: Platform Storage Area	34
35	Heat Trace Alum Tank		20		C		50			36
37	Disconnect Switch: Condensing Unit #1 (CU-1)	2#6 & 10g	40		A					38
39					B		100		Panel PPB	40
41	Heat Trace Alum Tank		15		C					42

ITALICS DENOTES ESTIMATED.

Connected VA	Connected Amps	Measured VA	Measured Amps
			A
			B
			C

Source Feeder CB/Fuse size :
Feeder cable size :
Branch C.B's min Isc (sym) :
One Line Diagram Dwg. #

Pennoni ASSOCIATES INC. CONSULTING ENGINEERS

Shaded Areas Indicates - New Work | Total | Date read | Denotes: Circuit not verified

FAX Changes to Panel Directory to Pennoni : (302) 234 - 4610

CNEW1612 - PPA.xlsx | Page 1 of 1

Panel PPB — Curtis Water Treatment Plant

LAST UPDATED 1/20/17

VOLTS: 208Y/120 | PHASE: 3 | WIRE: 4 | New Work (CNEW-1612) Curtis Water Plant

?A BUS | FLOOR: ?? | ROOM: ?

?A MLO | FED FROM : Panel 'PPA' ckts 38/40/42

Surf/Flush mounted | Manuf: Cutler Hammer / EATON

CKT No	DESIGNATION	BRANCH WIRING	C.B. AMPS	LOAD VA	PH	LOAD VA	C.B. AMPS	BRANCH WIRING	DESIGNATION	CKT No
1	Mixer Alum & Polymer		20		A		20		Mixer Polymer & Potassium Permanganate	2
3	Mixer Activated Carbon		20		B		20		SPARE	4
5	CFP-AC 1&2		20		C		20		SPARE	6
7	BLANK		20		A		20		PWC (Turn off to Adj Float)	8
9	CFP-F 1&2		20		B		20		MCP	10
11	Motorized Valves Unit #1		20		C		20		Motorized Valves Unit #2	12
13	Motorized Valves Unit #3		20		A		20		Motorized Valves Unit #4	14
15	Motorized Valves Unit #5		20		B		20		Cp Panel	16
17	Telemetry System		20		C		20		Aquaritrol & FWEP (Hand Held Contr.)	18
19	SPARE		20		A		30		SPARE	20
21	Motor Operated Door		20		B		20		Battery Charger	22
23	Motor Operated Door, South Door	2#12 & 12g	20		C					24
25	SPARE				A		20		Jacket Heater	26
27			20		B		20		SPARE	28
29	RCP-1		20		C		20		Chlorine Pump Treatment Rm	30
31	RCP-2		20		A					32
33	RCP-3		20		B		20		BLANK	34
35	RCP-4		20		C					36
37	RCP-5		20		A		20		Honeywell Panel	38
39	Sewer Lift Pump		20		B		30		Block Heater	40
41	Sewer Alarm		15		C					42

ITALICS DENOTES ESTIMATED.

Connected VA	Connected Amps	Measured VA	Measured Amps
			A
			B
			C

Source Feeder CB/Fuse size : 100A
Feeder cable size :
Branch C.B's min Isc (sym) :
One Line Diagram Dwg. #

Pennoni ASSOCIATES INC. CONSULTING ENGINEERS

Shaded Areas Indicates - New Work | Total | Date read

FAX Changes to Panel Directory to Pennoni : (302) 234 - 4610

CNEW1612 - PPB.xlsx | Page 1 of 1

Panel LP — Curtis Water Treatment Plant

LAST UPDATED 1/20/17

VOLTS: 480Y/277 | PHASE: 3 | WIRE: 4 | New Work (CNEW-1612) Curtis Water Plant

225 A BUS | FLOOR: FIRST | ROOM: ELECTRIC

225 A MLO | FED FROM : MCC ckt 6A

Surf/Flush mounted | Manuf: Cutler Hammer / EATON type PH

CKT No	DESIGNATION	BRANCH WIRING	C.B. AMPS	LOAD VA	PH	LOAD VA	C.B. AMPS	BRANCH WIRING	DESIGNATION	CKT No
1	Lights: Treatment Rm. W. Side		20		A		20		Lights: Treatment Rm Center	2
3	Lights: Chem Stor, Chem treatment, ECR		20		B		20		SPARE	4
5	Lights: Exterior VIA Time Clock in ECR		20		C		20		Lights: Mezz, Storage	6
7	Lab Lights		20		A		20		BLANK	8
9	BLANK		20		B		20		SPARE	10
11	UH-2		20		C		20		Unit Heater UH-4	12
13	UH-3		30		A		30		Unit Heater UH-5	14
15	UH-6		30		B				BLANK	16
17	BLANK				C		30		Water Heater	18
19					A		20			20
21			20		B				BLANK	22
23					C				BLANK	24
25					A					26
27	Duct Heater Chem		20		B		15		Duct Chem	28
29					C					30
31					A					32
33	Hoist		15		B		15			34
35					C					36

ITALICS DENOTES ESTIMATED.

Pennoni ASSOCIATES INC. CONSULTING ENGINEERS

Connected VA	Connected Amps	Measured VA	Measured Amps
			A
			B
			C

Source Feeder CB/Fuse size : 100A
Feeder cable size :
Branch C.B's min Isc (sym) :
One Line Diagram Dwg. #

Shaded Areas Indicates - New Work | Total | Date read | Denotes: Circuit not verified

FAX Changes to Panel Directory to Pennoni : (302) 234 - 4610

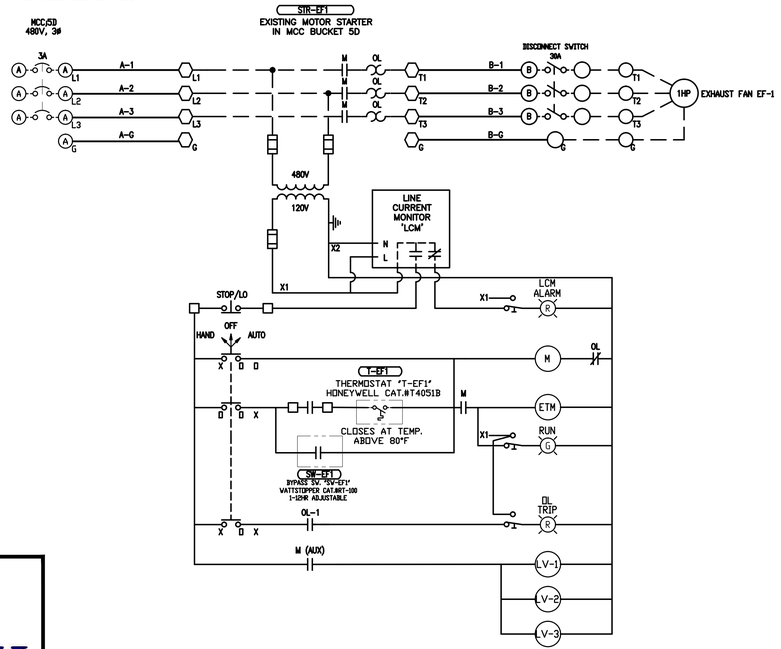
CNEW1612 - LP.xlsx | Page 1 of 1

BUILDING GABLE WEST
EXHAUST FAN EF-1
POWER PLAN: E1002
SINGLE LINE: E1005

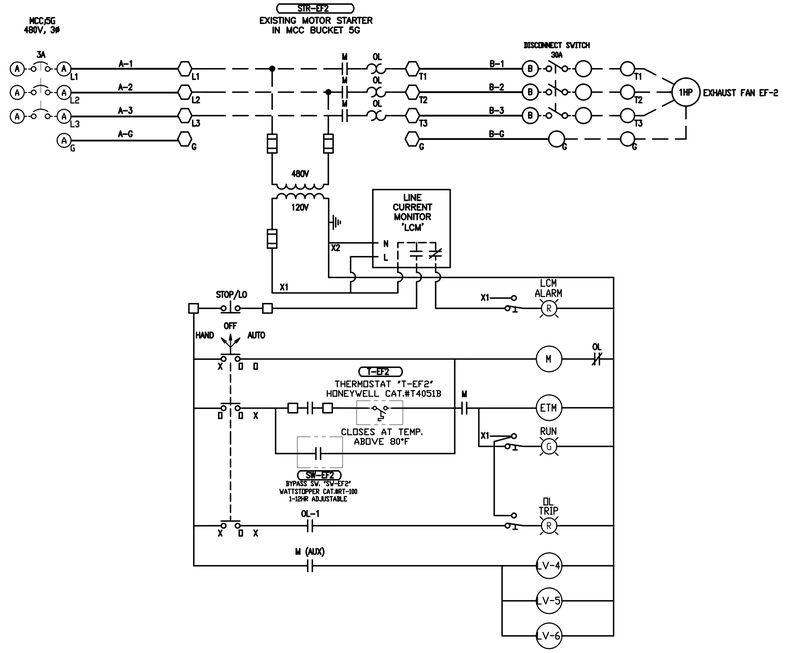
1 POWER NEW WORK - PANEL SCHEDULES

SCALE : NONE

0 1' 2' 4' 8'



BUILDING GABLE EAST
EXHAUST FAN EF-2
POWER PLAN: E1002
SINGLE LINE: E1005



2 EXHAUST FAN CONTROLS WIRING DIAGRAM

SCALE : NONE

0 1' 2' 4' 8'

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

NEW WORK PANEL SCHEDULES

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	DAP
APPROVED BY	DVH

E1006

SHEET 35 OF 54

W:\PROJECTS\CNEW\CNEW1612\Curtis WTP Improvements\DESIGN\ENELEC-NEW WORK.dwg | PLOTTED: 4/12/2017 3:30 PM, BY: Brian Miller | PLOTSTYLE: NCYW.ctb | PROJECT STATUS: CONSTRUCTION PLANS

GENERAL ELECTRICAL NEW WORK NOTES:

1. E.C. SHALL REUSE EXISTING CONDUIT WHERE POSSIBLE TO ROUTE NEW SIGNAL/CONTROL WIRING.
2. E.C. SHALL PULL POWER & SIGNAL/CONTROL CABLES FROM EACH DEVICE BACK TO SIEMENS PANEL IN MCC ROOM. E.C. SHALL PULL 15' FEET OF EXTRA CABLE TO ALLOW ACS TO ROUTE INTO SIEMENS PANEL.
3. E.C. SHALL INSTALL AND LABEL EACH CABLE AT DEVICE TERMINATION WITH CONTROL CABLE TAG #.

ELECTRICAL INSTRUMENT AND CONTROLS LIST

Tag	Name	Signal	From	Termination	DI	AI	DO	AO	#12	#14	G	TSP	E	Area	CN	Conduit	Size
	Effluent Monitoring																
AIT 101	Finished Water Chlorine Transmitter	4-20mA	AIT 101	FCP		1						1				C-101	3/4
AIT 102	Finished Water Fluoride Transmitter	4-20mA	AIT 102	FCP		1						1				C-101	3/4
AIT 103	Finished Water Flow Meter Transmitter	120 VAC	AIT 103	FCP	1	1										C-102	3/4
	Hypo Feed																
MC 101	Hypo Feeder #1 auto/run/ tube failure	120 VAC	MC 101	FCP	2		1			6						C-103	1
MC 102	Hypo Feeder #2 auto/run/ tube failure	120 VAC	MC 102	FCP	2		1			6						C-103	1
SC 101	Hypo Feeder #1 Speed Control	4-20 mA	MP 7 101	FCP				1				1				C-104	3/4
SC 102	Hypo Feeder #2 Speed Control	4-20 mA	MP 8 102	FCP				1				1				C-104	3/4
	Caustic Feed																
MC 103	Caustic Feeder #1 auto/run/ tube failure	120 VAC	MC 103	FCP	2		1			6						C-105	1
MC 104	Caustic Feeder #2 auto/run/ tube failure	120 VAC	MC 104	FCP	2		1			6						C-105	1
SC 103	Caustic Feeder #1 Speed Control	4-20 mA	MP 12 103	FCP				1				1				C-106	3/4
SC 104	Caustic Feeder #2 Speed Control	4-20 mA	MP 13 104	FCP				1				1				C-106	3/4
	Hypo Tank																
LT 101	Hypo Tank Level Transmitter	4-20 mA	LT 101	FCP		1						1				C-107	3/4
LT 102	Hypo Tank Level Transmitter	4-20 mA	LT 102	FCP		1						1				C-108	3/4
LD 101	Hypo Tank Leak Detector	4-20 mA	LD 101	FCP		1						1				C-108A	3/4
LD 102	Hypo Tank Leak Detector	4-20 mA	LD 102	FCP		1						1				C-108A	3/4
LSH 101	Hypo Level Switch High	120 VAC	LSH 101	FCP	1					2						C-109	3/4
LSH 102	Hypo Level Switch High	120 VAC	LSH 102	FCP	1					2						C-110	3/4
LI 101	Hypo Tank Level Indicator	4-20 mA	FCP	Hypo FP								1				C-111	3/4
LI 102	Hypo Tank Level Indicator	4-20 mA	FCP	Hypo FP								1				C-111	3/4
AY 101	Local Alarm Relay	120 VAC					1										
AY 102	Local Alarm Relay	120 VAC					1										
LAH 101	Local Alarm Indicator	120 VAC	FCP	Hypo FP						2						C-112	3/4
LAH 102	Local Alarm Indicator	120 VAC	FCP	Hypo FP						2						C-112	3/4
LA 101	Local Rotating Beacon	120 VAC	LA 101	Hypo FP						2	1					C-113	3/4
	Caustic Tank																
LT 103	Caustic Tank Level Transmitter	4-20 mA	LT 103	FCP		1						1				C-114	3/4
LT 104	Caustic Tank Level Transmitter	4-20 mA	LT 104	FCP		1						1				C-115	3/4
LD 103	Caustic Tank Leak Detector	4-20 mA	LD 103	FCP		1						1				C-115A	3/4
LD 104	Caustic Tank Leak Detector	4-20 mA	LD 104	FCP		1						1				C-115A	3/4
LSH 103	Caustic Level Switch High	120 VAC	LSH 103	FCP	1					2						C-116	3/4
LSH 104	Caustic Level Switch High	120 VAC	LSH 104	FCP	1					2						C-117	3/4
LI 103	Caustic Tank Level Indicator	4-20 mA	FCP	Caustic FP								1				C-118	3/4
LI 104	Caustic Tank Level Indicator	4-20 mA	FCP	Caustic FP								1				C-118	3/4
AY 103	Local Alarm Relay	120 VAC					1										
AY 104	Local Alarm Relay	120 VAC					1										
LAH 103	Local Alarm Indicator	120 VAC	FCP	Caustic FP						2						C-119	3/4
LAH 104	Local Alarm Indicator	120 VAC	FCP	Caustic FP						2						C-119	3/4
LA 103	Local Rotating Beacon	120 VAC	LA 103	Caustic FP						2	1					C-120	3/4
	Polymer Feeders																
MC 105	Polymer Feeder #1 auto/run/ failure	120 VAC	PSCP	FCP	2		1			6						C-121	1
FAL 105	Dilution Water Flow Low	120 VAC	PSCP	FCP	1					2						C-121	1
WIT 105	Polymer Drum Scale Indicator	4-20 mA	WIT	FCP		1						1				C-122	
LAH 105	Polymer Day Tank Level Alarm -High	120 VAC	PSCP	FCP	1					2						C-121	1
LAL 105	Polymer Day Tank Level Alarm -Low	120 VAC	PSCP	FCP	1					2						C-121	1
	Ploymer Feed Pumps																
MC 106	Polymer Feeder #1 auto/run/ failure	120 VAC	MC 106	FCP	2		1			6						C-123	1.5
SC 106	Polymer Feeder #1 Speed Control	4-20 mA	MP 46 106	FCP				1				1				C-124	1
MC 107	Polymer Feeder #2 auto/run/ failure	120 VAC	MC 107	FCP	2		1			6						C-123	1.5
SC 107	Polymer Feeder #2 Speed Control	4-20 mA	MP 48 107	FCP				1				1				C-124	1
MC 108	Polymer Feeder #3 auto/run/ failure	120 VAC	MC 108	FCP	2		1			6						C-123	1.5
SC 108	Polymer Feeder #3 Speed Control	4-20 mA	MP 50 108	FCP				1				1				C-124	1
MC 109	Polymer Feeder #4 auto/run/ failure	120 VAC	MC 109	FCP	2		1			6						C-123	1.5
SC 109	Polymer Feeder #4 Speed Control	4-20 mA	MP 52 109	FCP				1				1				C-124	1
MC 1010	Polymer Feeder #5 auto/run/ failure	120 VAC	MC 1010	FCP	2		1			6						C-123	1.5
SC 1010	Polymer Feeder #5 Speed Control	4-20 mA	MP 54 1010	FCP				1				1				C-124	1
	Fluoride Feed																
MC 111	Fluoride Feeder auto /run / failure	120 VAC	FI CP	FCP	2		1			6						C-125	1
SC 111	Fluoride Feeder Speed Control	4-20 mA	FI CP	FCP				1				1				C-126	3/4
LSH 16	FI Containment Level Switch High	120 VAC	FI CP	FCP	1					2						C-125	1
LSH 17	NaF Level Switch High	120 VAC	FI CP	FCP	1					2						C-125	1
	Raw Water Monitoring																
AIT 104	Raw Water Turbidity	4-20mA	AIT 104	FCP		1						1		C-126	3/4	C-127	3/4
AIT 105	Raw Water pH	4-20mA	AIT 105	FCP		1						1		C-126	3/4	C-127	3/4

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E. TARDONA LICENSE No. 6304 PROFESSIONAL ENGINEER DELAWARE

CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE
ELECTRICAL INSTRUMENT & CONTROL LIST
CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

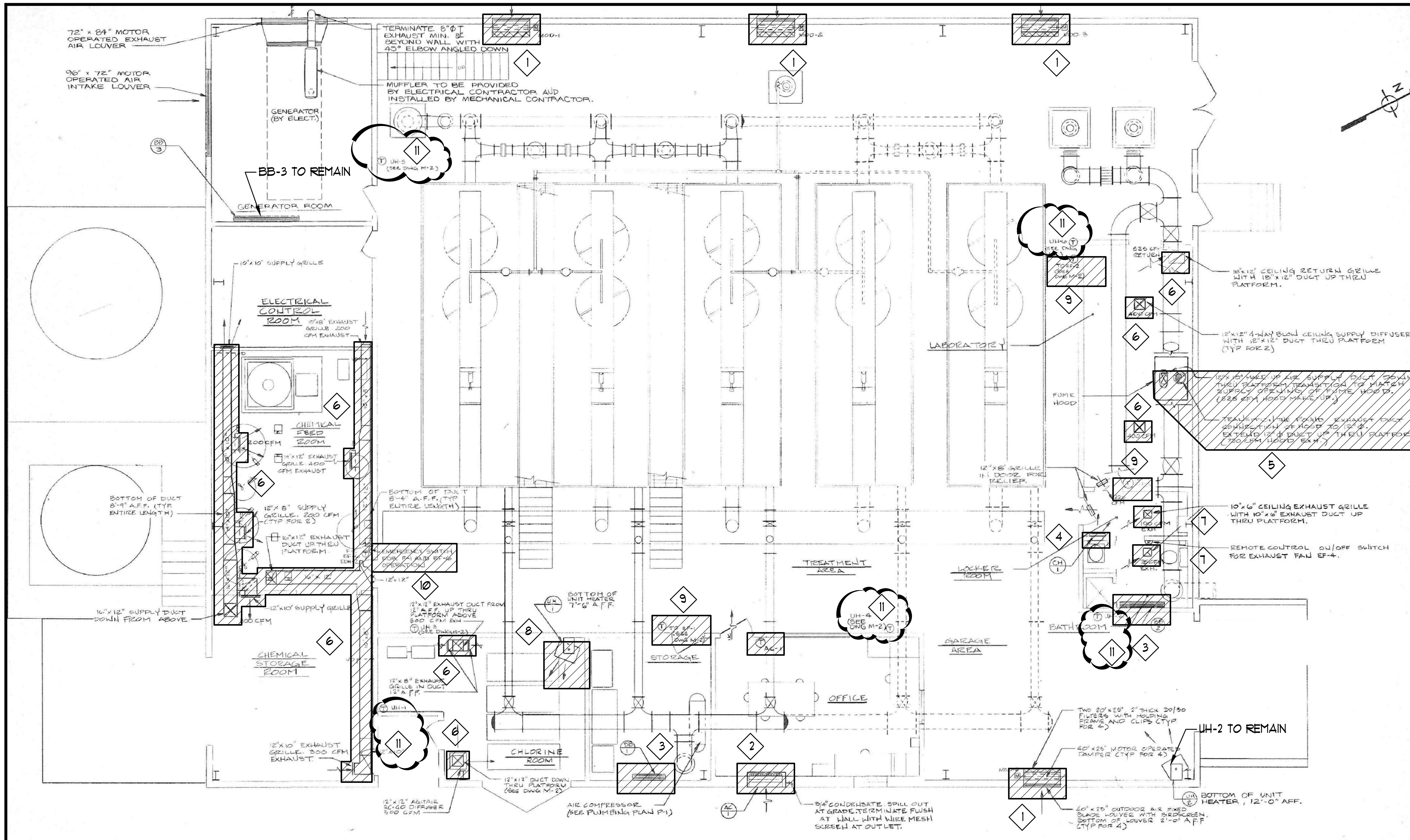
NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	DAP
APPROVED BY	DVH

E1007

SHEET 36 OF 54

W:\PROJECTS\CNEW\CNEW1612-Curtis WTP Improvements\DESIGN\ELEC\NEW WORK.dwg PLOTTED: 4/12/2017 3:31 PM, BY: Brian Miller PLOTSTYLE: NCYN.ctb PROJECT STATUS: CONSTRUCTION PLANS



1 HVAC DEMOLITION PLAN - GROUND FLOOR

SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'

SPECIFIC DEMOLITION NOTES

1. REMOVE EXISTING THROUGH-WALL LOUVERS INCLUDING MOTOR-OPERATED DAMPERS
2. REMOVE EXISTING THROUGH-WALL A/C UNIT AC-1 INCLUDING T-STAT AT OFFICE DOOR
3. REMOVE EXISTING ELECTRIC BASEBOARD HEATER
4. REMOVE EXISTING CABINET HEATER CH-1
5. REMOVE EXISTING FUME HOOD EXHAUST AND MAKE-UP AIR SUPPLY DUCTWORK
6. REMOVE EXISTING DUCTWORK INCLUDING TERMINAL UNIT (GRILLE, REGISTER, DEFFUSER)
7. REMOVE EXISTING EXHAUST DUCTWORK AND EF-4 ON PLATFORM INCLUDING REMOTE CONTROL
8. REMOVE EXISTING ELECTRIC UNIT HEATER
9. REMOVE EXISTING T-STAT FOR EXHAUST FAN, AH, CU, ETC.
10. REMOVE EXISTING CONTROLS FOR F-1, EF-6 AND EDH-2
11. RELOCATE EXISTING T-STAT FOR UNIT HEATER ABOVE - SEE DWG. M1001 (NEW WORK) FOR NEW T-STAT LOCATIONS & DWG. M1002 (NEW WORK) FOR UNIT HEATER LOCATIONS.
12. RELOCATE EXISTING T-STAT FOR UNIT HEATER UH-1 - SEE DWG. M1001 (NEW WORK) FOR NEW T-STAT LOCATIONS. RELOCATE UH-1 - SEE DWG. M1002 (NEW WORK) FOR NEW UH LOCATION.

DEMOLITION LEGEND:

(hatched) COMPLETELY DISMANTLE & REMOVE ALL DUCTWORK, FITTINGS, TERMINAL UNITS, ETC. WITHIN HATCHED CLOUDS.

GENERAL MECHANICAL DEMOLITION NOTES:

DUCTWORK AND COMPONENTS:

1. CONTRACTOR TO VERIFY ALL FIELD CONDITIONS, DUCT ROUTING , SIZES , SEPARATION POINTS, REMOVAL AND DISPOSAL METHODS PRIOR TO BEGINNING THE DEMOLITION WORK. COORDINATE DEMOLITION AND TIMING WITH CONSTRUCTION MANAGER AND OWNER PRIOR TO BEGINNING WORK.

2. GENERAL CONTRACTOR IS RESPONSIBLE TO REMOVE FROM BUILDING SITE DEBRIS, TRASH, AND OTHER DISCARDED MATERIALS AND/OR EQUIPMENT RESULTING FROM DEMOLITION OPERATIONS. TRANSPORT AND LEGALLY DISPOSE OFF SITE.

3. IF HAZARDOUS MATERIALS ARE ENCOUNTERED DURING DEMOLITION OPERATIONS, COMPLY WITH APPLICABLE REGULATIONS, LAWS, AND ORDINANCES CONCERNING REMOVAL, HANDLING, AND PROTECTION AGAINST EXPOSURE OR ENVIRONMENTAL POLLUTION.

4. COORDINATE ALL DEMOLITION WITH OWNER AND OTHER TRADES. CONFIRM THE EXTENT, TIMING, AND ITEMS TO BE SALVAGED WITH OWNER. CONTRACTOR SHALL SCHEDULE WORK, TO LIMIT OVERALL OPERATIONAL DOWNTIME.

5. ALL REMAINING DUCTWORK SHALL BE CAPPED AND SEALED LEAK TIGHT USING THE SAME MATERIALS AS THE EXISTING DUCT SYSTEM.

6. DURING DEMOLITION ALL UNUSED HANGERS, STRAPS, ANCHORS AND SUPPORTS SHALL BE REMOVED.

7. IF CONTRACTOR DAMAGES OR REMOVES EXISTING DUCT INSULATION TO PROVIDE ACCESS TO REMOVE, MODIFY OR CONNECT TO EXISTING DUCTS, THE CONTRACTOR SHALL REPAIR AND/OR REPLACE THE DAMAGED OR REMOVED SECTION TO MATCH EXISTING.

8. ALL REMOVED EQUIPMENT (I.E. FANS, CONDENSING UNITS, COILS, ETC.) SHALL BE DISPOSED OF PROPERLY ACCORDING TO THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

9. NO UNUSED DUCTWORK SHALL BE CONSIDERED "ABANDONED IN PLACE" UNLESS DEFINED IN THE CONSTRUCTION DOCUMENTS. REMOVE AND DISPOSE OF ALL DUCTS SHOWN TO BE REMOVED ON DEMOLITION DRAWINGS.

10. ALL EXISTING UNUSED DUCT PENETRATIONS THROUGH WALLS, FLOORS, PLATFORMS OR ROOFS SHALL BE PATCHED TO MATCH EXISTING FINISHES.

11. COMPLETELY REMOVE EXISTING ROOF TOP EXHAUST FAN CURBS COINCIDING WITH REMOVAL OF ROOFING SYSTEM.

12. FIRE MAINS, SPRINKLER TAKEOFFS, SPRINKLER HEADS AND ALL PIPING OR COMPONENTS ASSOCIATED WITH FIRE PROTECTION SYSTEM ARE NOT PART OF THIS DEMOLITION CONTRACT AND ARE NOT TO BE DISTURBED UNDER ANY CIRCUMSTANCES.

13. CARE MUST BE TAKEN TO PROTECT EXISTING TREATMENT EQUIPMENT IN THE AREA WHICH WILL REMAIN IN SERVICE.

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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JAMES E. TARDONA LICENSE No. 6304 DELAWARE PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

MECHANICAL DEMOLITION GROUND FLOOR PLAN

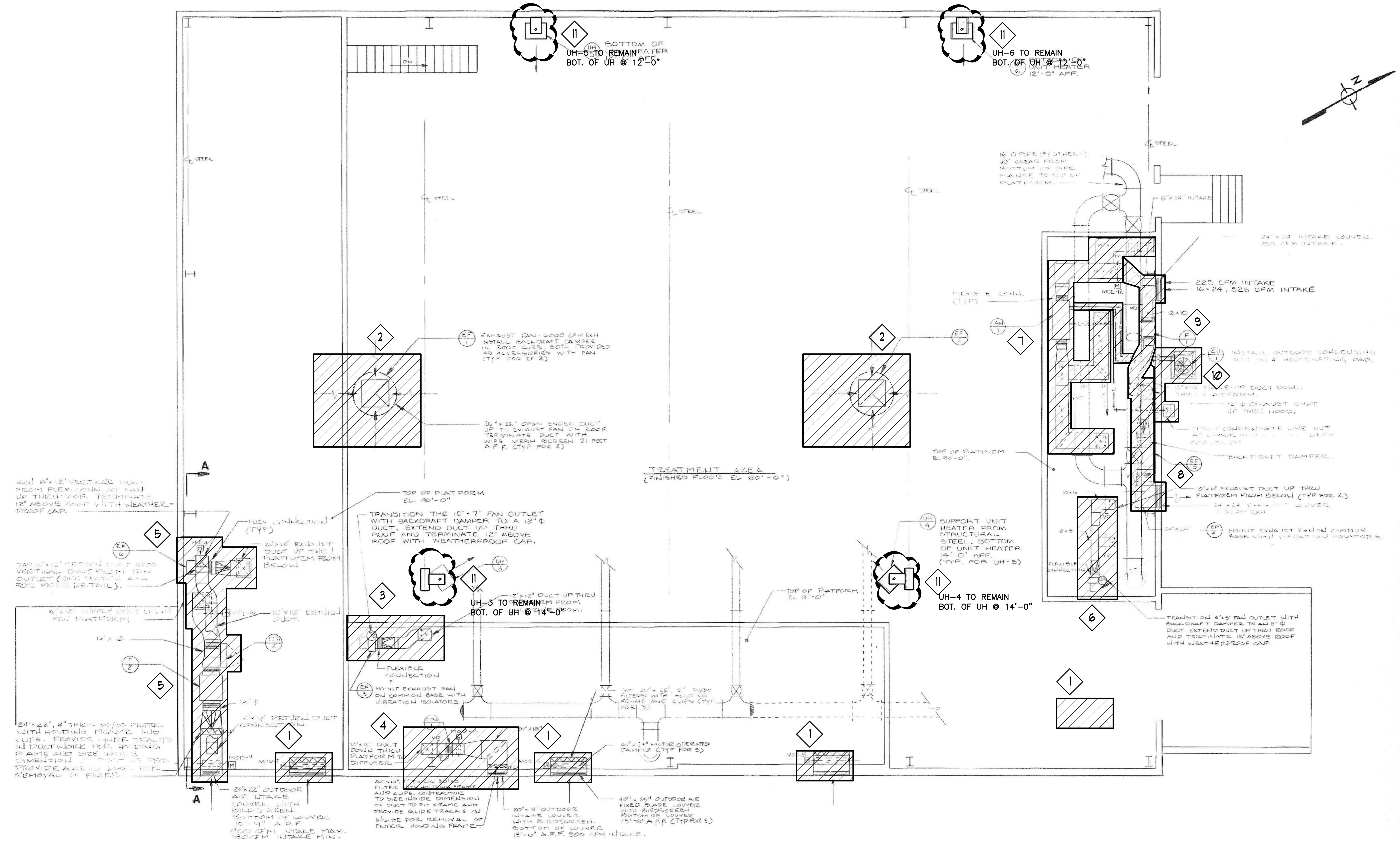
CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	3/16" = 1'-0"
DRAWN BY	HMM
APPROVED BY	SJV

DM1001

W:\PROJECTS\CNEW\CNEW1612-Curtis WTP Improvements\DESIGN\M\Mechanical Demolition Background.dwg PLOTTED: 4/12/2017 3:31 PM, BY: Brian Miller PLOTSTYLE: NCYW.ctb PROJECT STATUS: CONSTRUCTION PLANS



1 HVAC DEMOLITION PLAN - PLATFORM
SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'

SPECIFIC DEMOLITION NOTES

1. REMOVE EXISTING THROUGH-WALL LOUVERS INCLUDING MOTOR-OPERATED DAMPERS
2. REMOVE EXISTING THROUGH-ROOF EXHAUST FAN INCLUDING INLET DUCT & T-STAT BELOW
3. REMOVE EXISTING CHLORINE ROOM EXHAUST SYSTEM COMPLETELY
4. REMOVE EXISTING DUCTWORK, ELECTRIC DUCT HEATER, INTAKE LOUVER AND DAMPERS
5. REMOVE EXISTING SUPPLY FAN F-2, EXHAUST FAN EF-6, DUCT HEATER, DAMPERS & DUCTWORK
6. REMOVE EXISTING EXHAUST FAN EF-4 INCLUDING DUCTWORK & CONTROLS BELOW
7. REMOVE EXISTING AH-1 INCLUDING INTAKE LOUVER W/DUCTWORK & SUPPLY DUCT DOWN
8. REMOVE EXISTING EF-5 INCLDUING DUCTWORK FROM HOOD AND EXHAUST LOUVER
9. REMOVE EXISTING FAN F-1 INCLUDING INTAKE DUCT W/LOUVER & SUPPLY DUCT DOWN
10. REMOVE EXISTING CONDENSING UNIT CU-1 INCLUDING REFRIGERANT & CONDENSATE PIPING
11. RELOCATE EXISTING T-STAT IN SPACE BELOW FOR UNIT HEATER - SEE DWG. M1001 (NEW WORK) FOR NEW LOCATIONS

FOR GENERAL DEMOLITION NOTES SEE DRAWING DM1001

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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JAMES E. TARDONA LICENSE NO. 6304 PROFESSIONAL ENGINEER DELAWARE

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

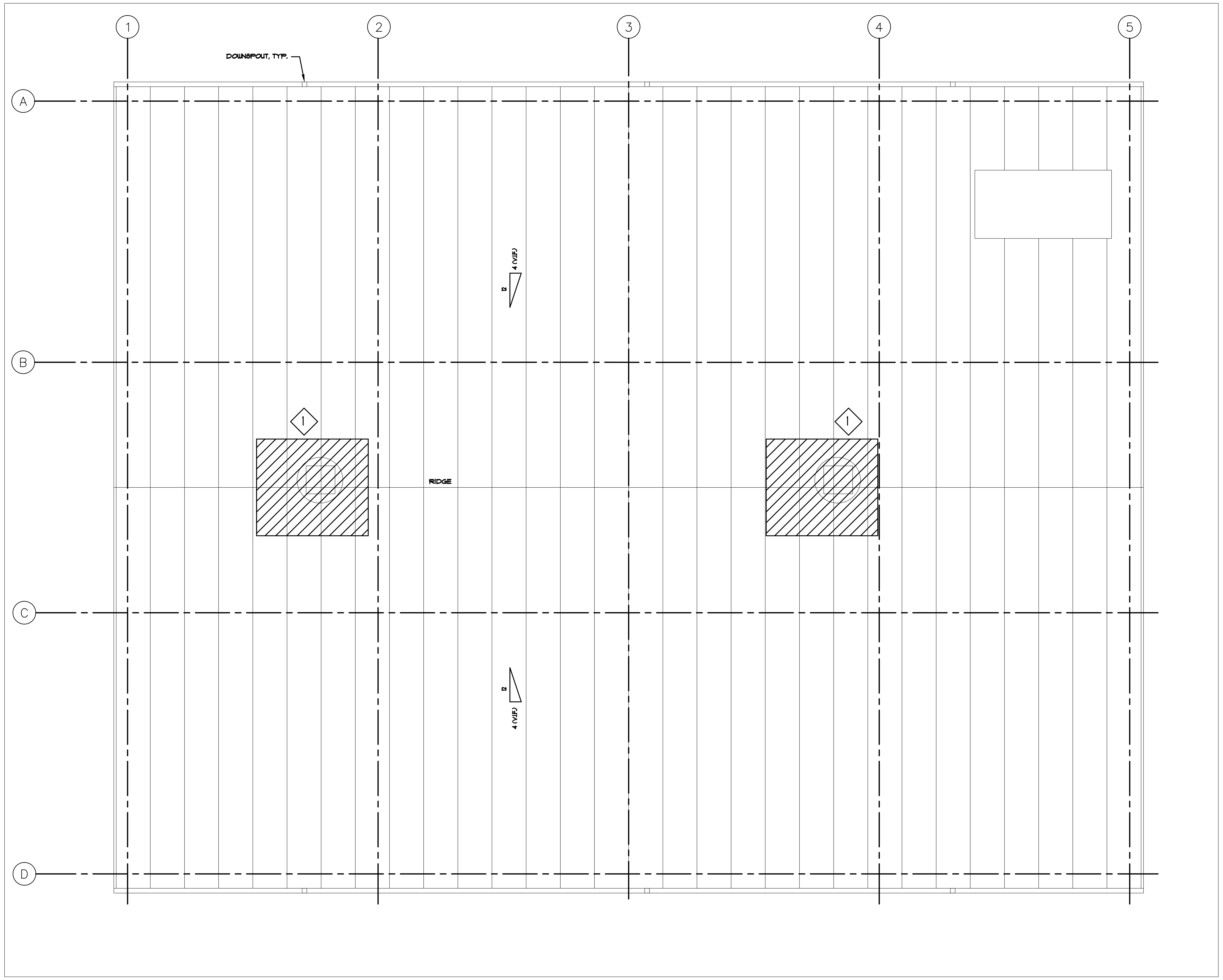
MECHANICAL DEMOLITION PLATFORM PLAN

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	3/16" = 1'-0"
DRAWN BY	HMM
APPROVED BY	SJV

DM1002



2 ROOF DEMOLITION PLAN

SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'

FOR GENERAL DEMOLITION NOTES SEE DRAWING DM1001

1. REMOVE EXISTING THROUGH-ROOF EXHAUST FAN INCLUDING INLET DUCT & T-STAT BELOW. COMPLETELY REMOVE ALL ROOF CURBS WITH ROOF SYSTEM.

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

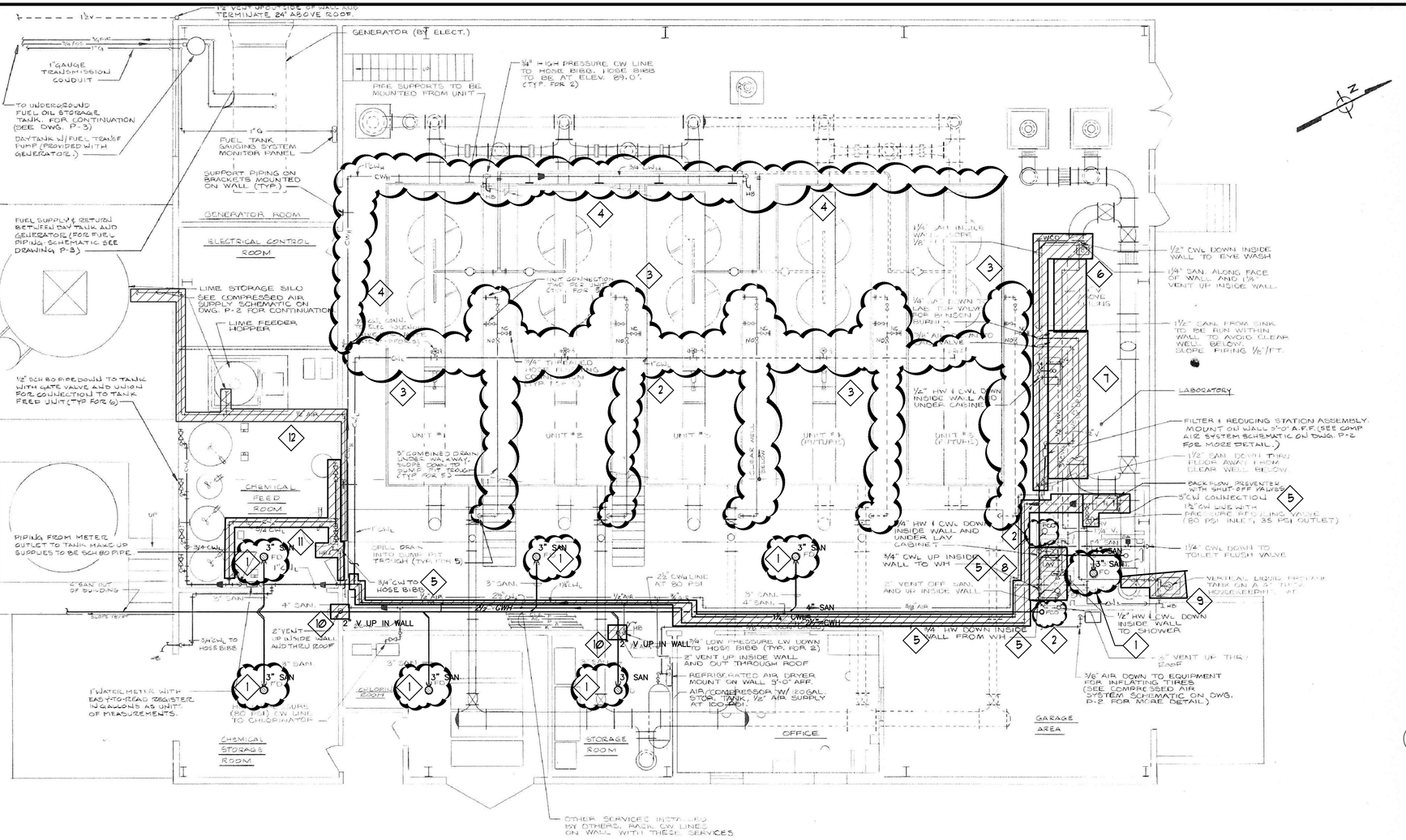
MECHANICAL DEMOLITION ROOF PLAN

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

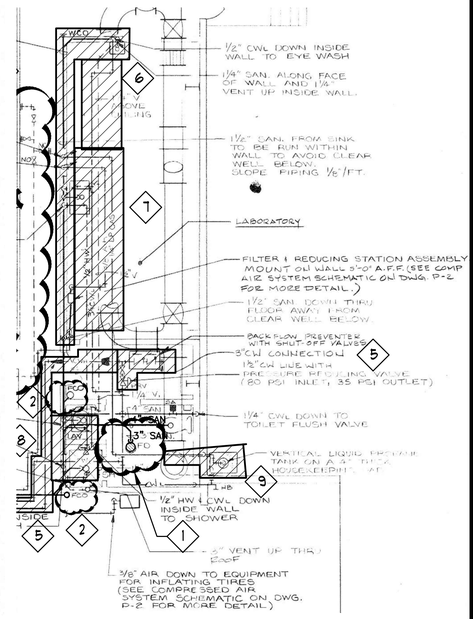
PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	3/16" = 1'-0"
DRAWN BY	BWM
APPROVED BY	SJV

DM1003



1 PIPING DEMOLITION PLAN - GROUND FLOOR
SCALE : 3/16" = 1'-0"

0 1' 2' 4' 8'



2 PIPING DEMOLITION PLAN - LABORATORY
SCALE : 3/16" = 1'-0"

FOR GENERAL DEMOLITION NOTES SEE DRAWING DM1001

IN ADDITION TO GENERAL DEMOLITION NOTES ON DRAWING DM1001, CARE MUST BE TAKEN TO PROTECT EXISTING TREATMENT EQUIPMENT IN THE AREA WHICH WILL REMAIN IN SERVICE.

SPECIFIC DEMOLITION NOTES

1. EXISTING FLOOR DRAIN TO REMAIN IN SERVICE
2. TAKE CARE TO INSURE THAT EXISTING FLOOR CLEAN-OUTS WHICH ARE TO REMAIN IN SERVICE ARE NOT DAMAGED OR DISTURBED
3. EXISTING SMALL BORE WATER PIPING TO/FROM UNITS 1 THRU 5 TO REMAIN
4. EXISTING SMALL BORE (2-1/2" & BELOW) CWH (80 PSI) & CWL (35 PSI) TO REMAIN
5. EXISTING BACKFLOW PREVENTER AND CWL REGULATOR TO BE REPLACED TO TIE-IN POINT SHOWN. CWH AND CWL PIPING OUT TO BUILDING TO BE REPLACED AS SHOWN AND BE RE-CONNECTED. SUPPORT ALL PIPING WHERE REQUIRED DUE TO STRUCTURAL MODIFICATIONS.
6. REMOVE EXISTING EYEWASH STATION FROM WALL INCLUDING CWL FEED & 1-1/4" WASTE IN WALL. REMOVE VENT LINE
7. REMOVE EXISTING SINK INCLUDING SUPPLY AND WASTE PIPING AND LAB PIPING AT BENCH
8. REMOVE EXISTING LAV & SHOWER PIPING AND WASTE
9. REMOVE EXISTING PROPANE TANK AND PIPING TO LAB BENCH
10. REMOVE EXISTING 2" VENT UP IN WALL & CAP AT FLOOR
11. REMOVE PORTIONS OF EXISTING CWL SYSTEM AS SHOWN & CAP INCLUDING HOSE BIBB
12. REMOVE PORTIONS OF EXISTING COMPRESSED AIR SYSTEM AS SHOWN & CAP AT HEADER

FLOOR PLAN AND SECTION INFORMATION DERIVED FROM "CITY OF NEWARK, WATER TREATMENT FACILITIES PLANT, CONTRACT W-90-1" PREPARED BY TATMAN & LEE ASSOCIATES, INC. DATED 10/1/1990

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E. TATMAN LICENSED PROFESSIONAL ENGINEER NO. 6304 DELAWARE

CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

PLUMBING DEMOLITION GROUND FLOOR PLAN

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	3/16" = 1'-0"
DRAWN BY	HMM
APPROVED BY	SJV

DP1001

SHEET 40 OF 54

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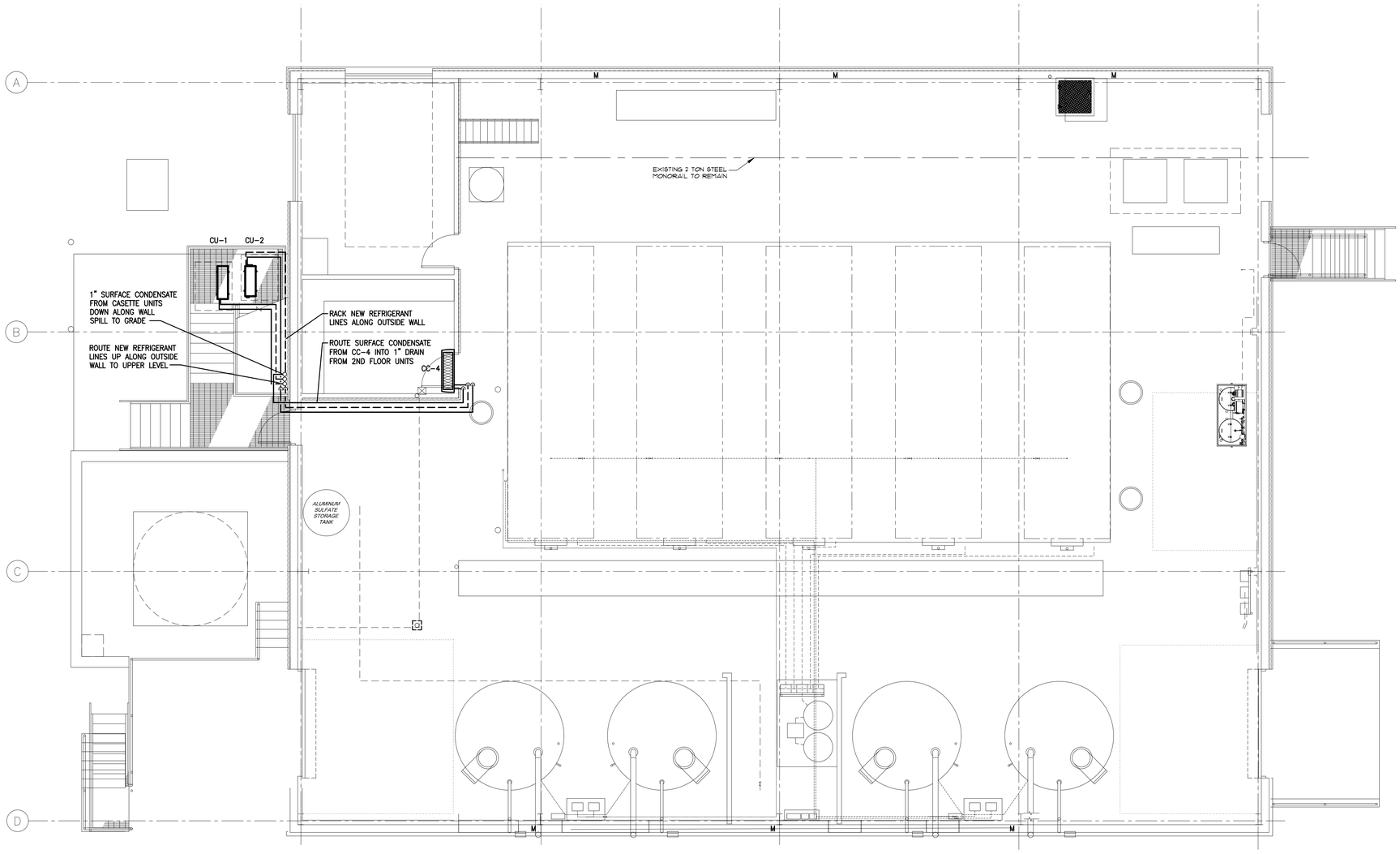

0 5' 10'

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STATE OF DELAWARE LICENSE No. 6304 PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

GROUND FLOOR PLAN NEW WORK

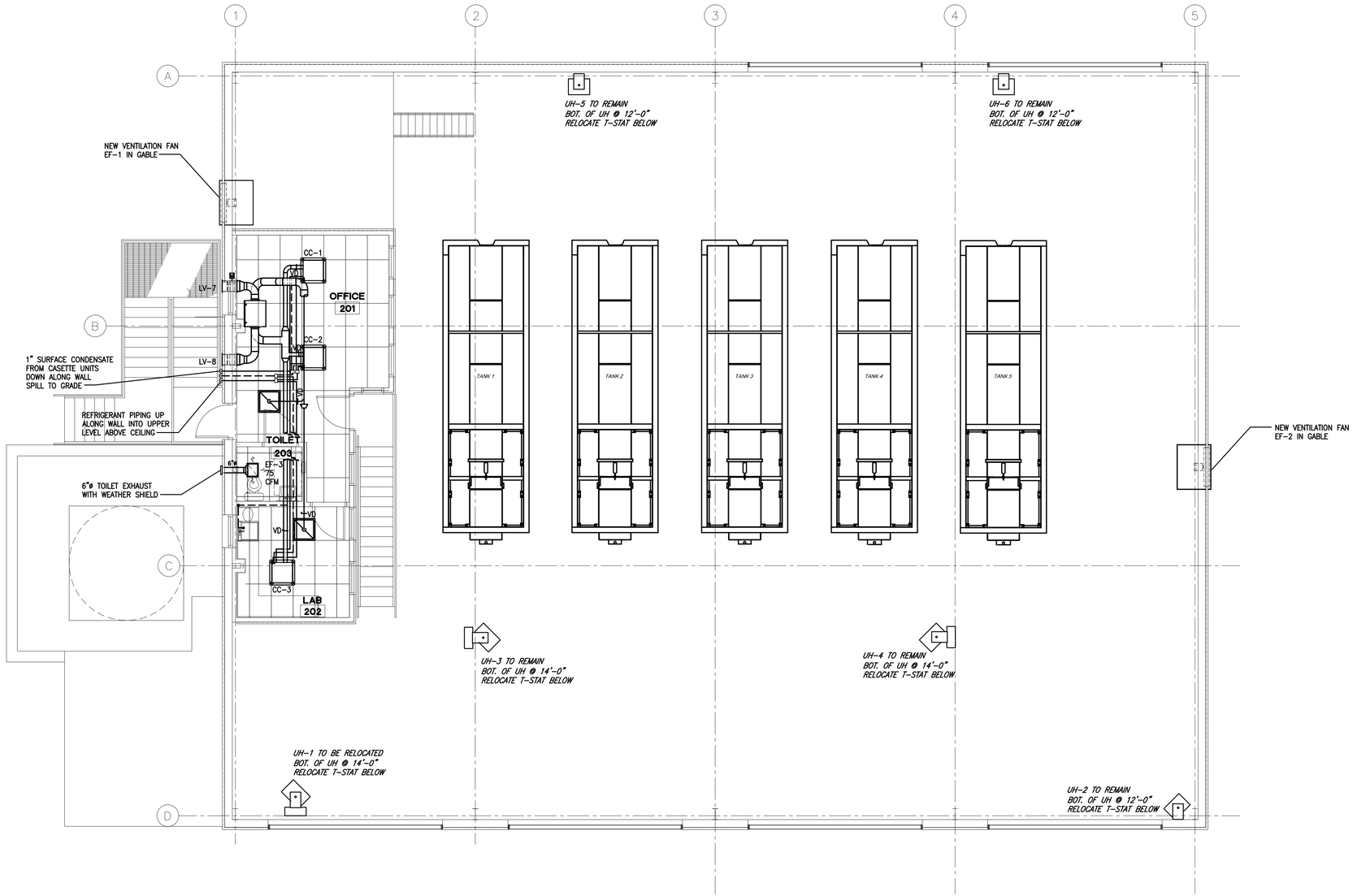
CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	3/16" = 1'-0"
DRAWN BY	HMM
APPROVED BY	SJV

M1001

SHEET 41 OF 54



0 5' 10'

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STATE OF DELAWARE LICENSED PROFESSIONAL ENGINEER No. 5304

CURTIS WATER TREATMENT PLANT
IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

MEZZANINE NEW WORK PLAN

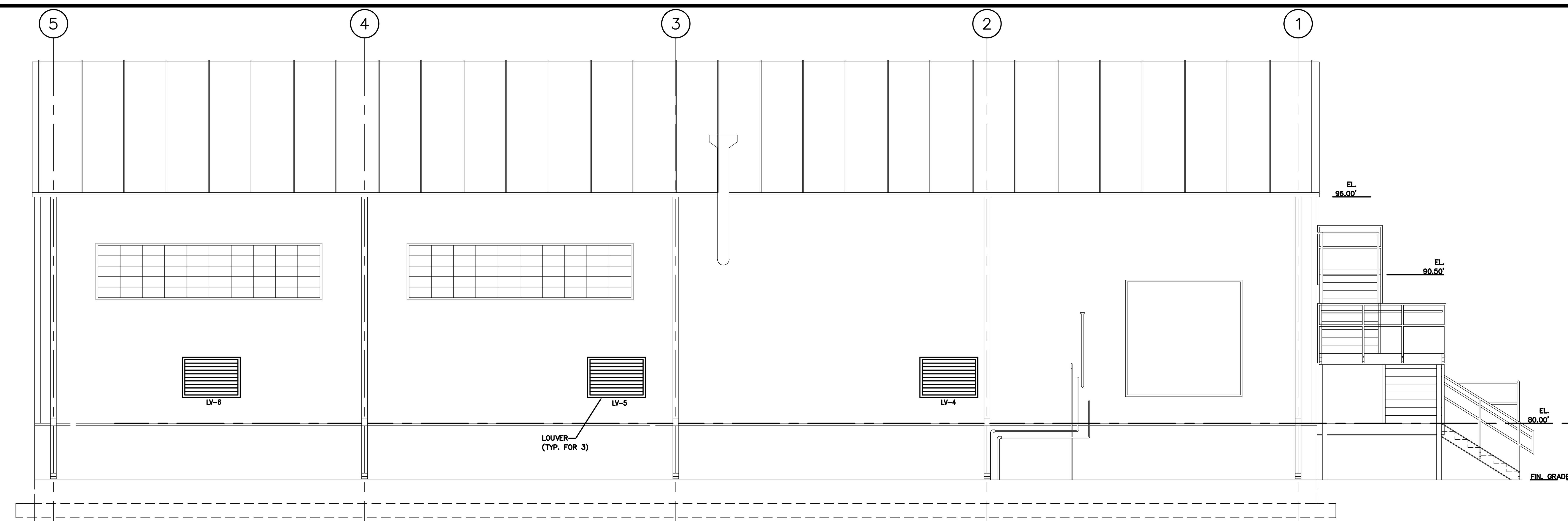
CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

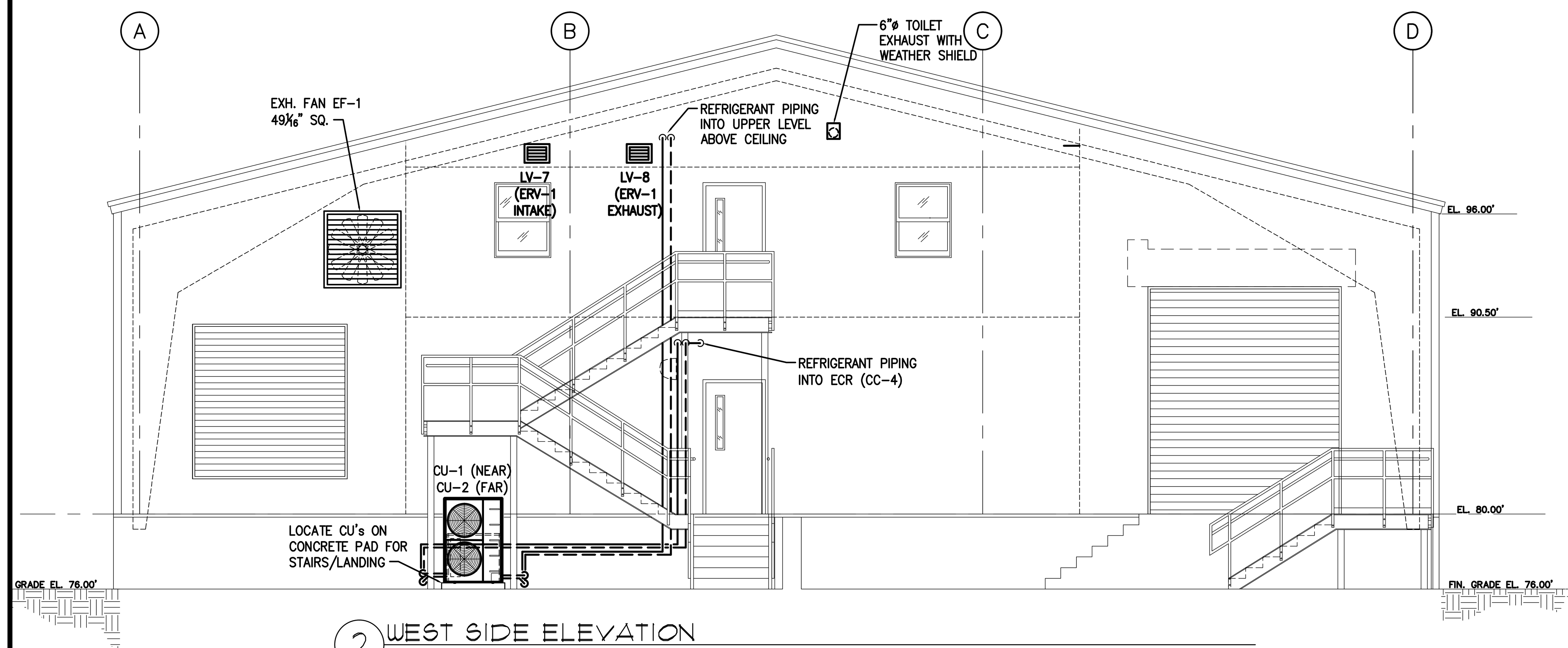
PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	HMM
APPROVED BY	SJV

M1002

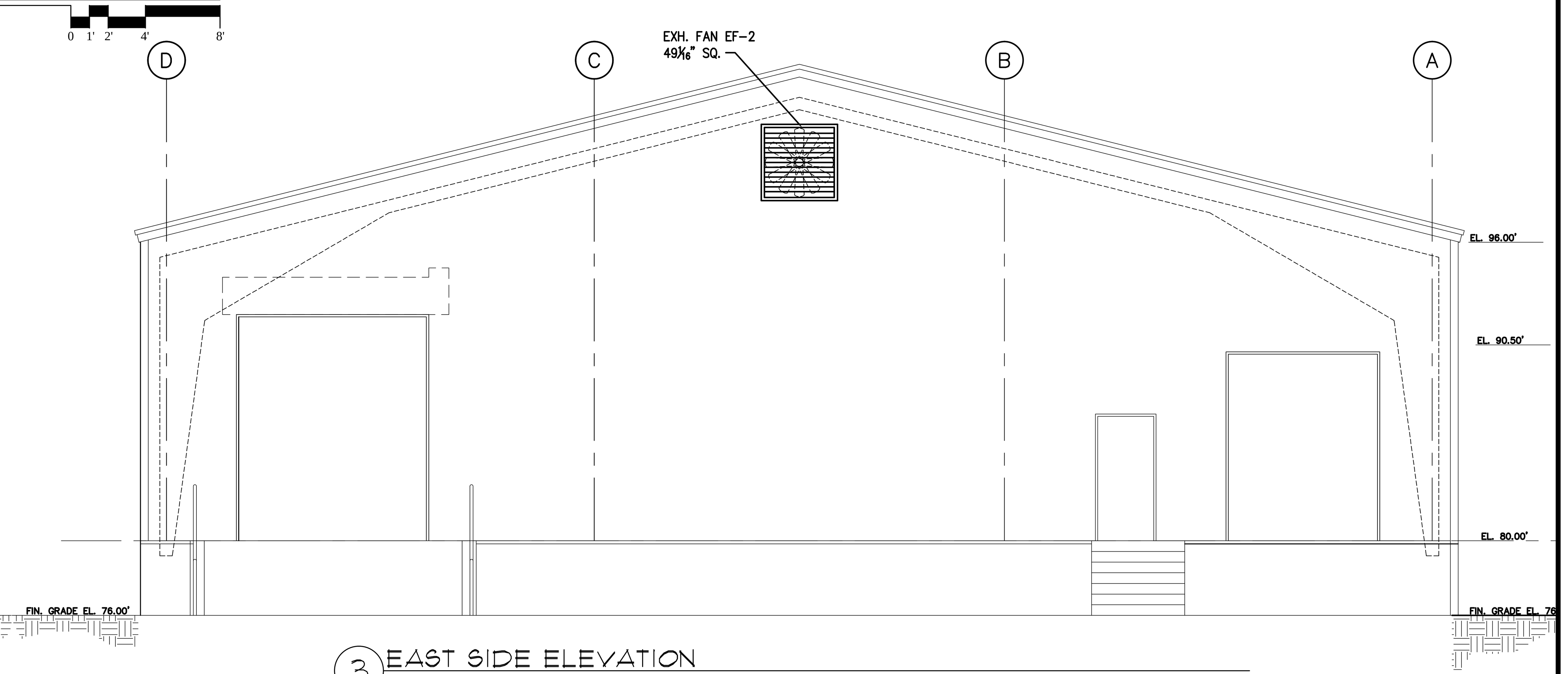
SHEET 42 OF 54



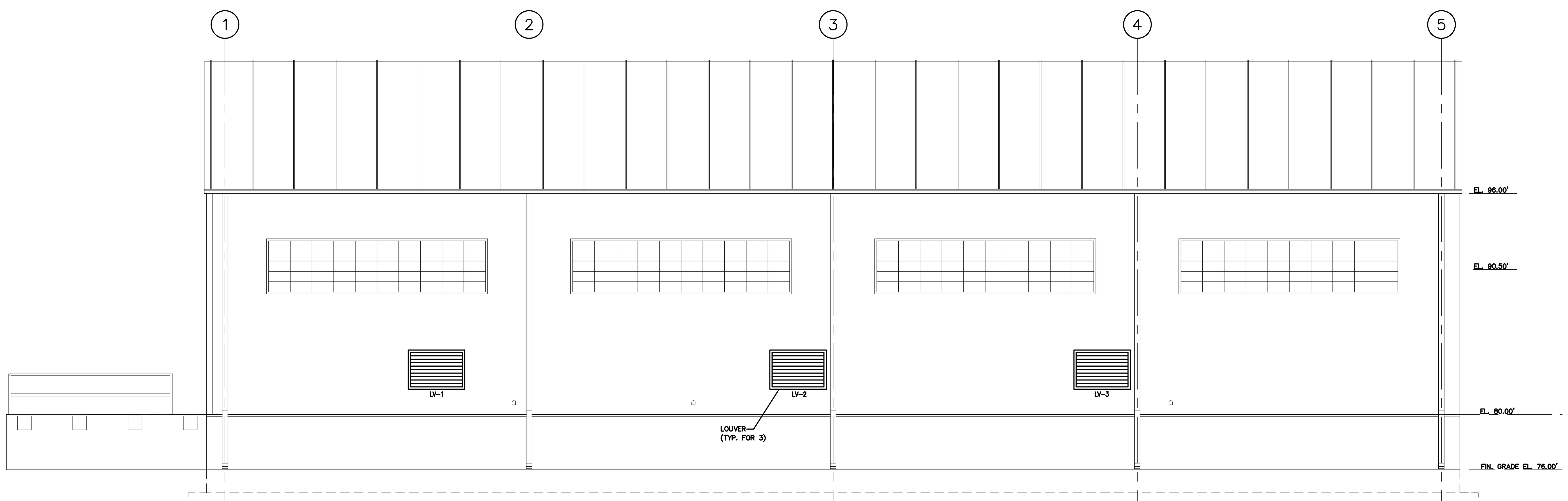
1 NORTH SIDE ELEVATION
SCALE : 3/16" = 1'-0"



2 WEST SIDE ELEVATION
SCALE : 3/16" = 1'-0"



3 EAST SIDE ELEVATION
SCALE : 3/16" = 1'-0"



4 SOUTH SIDE ELEVATION
SCALE : 3/16" = 1'-0"

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ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

JAMES E. TARDONA LICENSE NO. 6304 DELAWARE PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

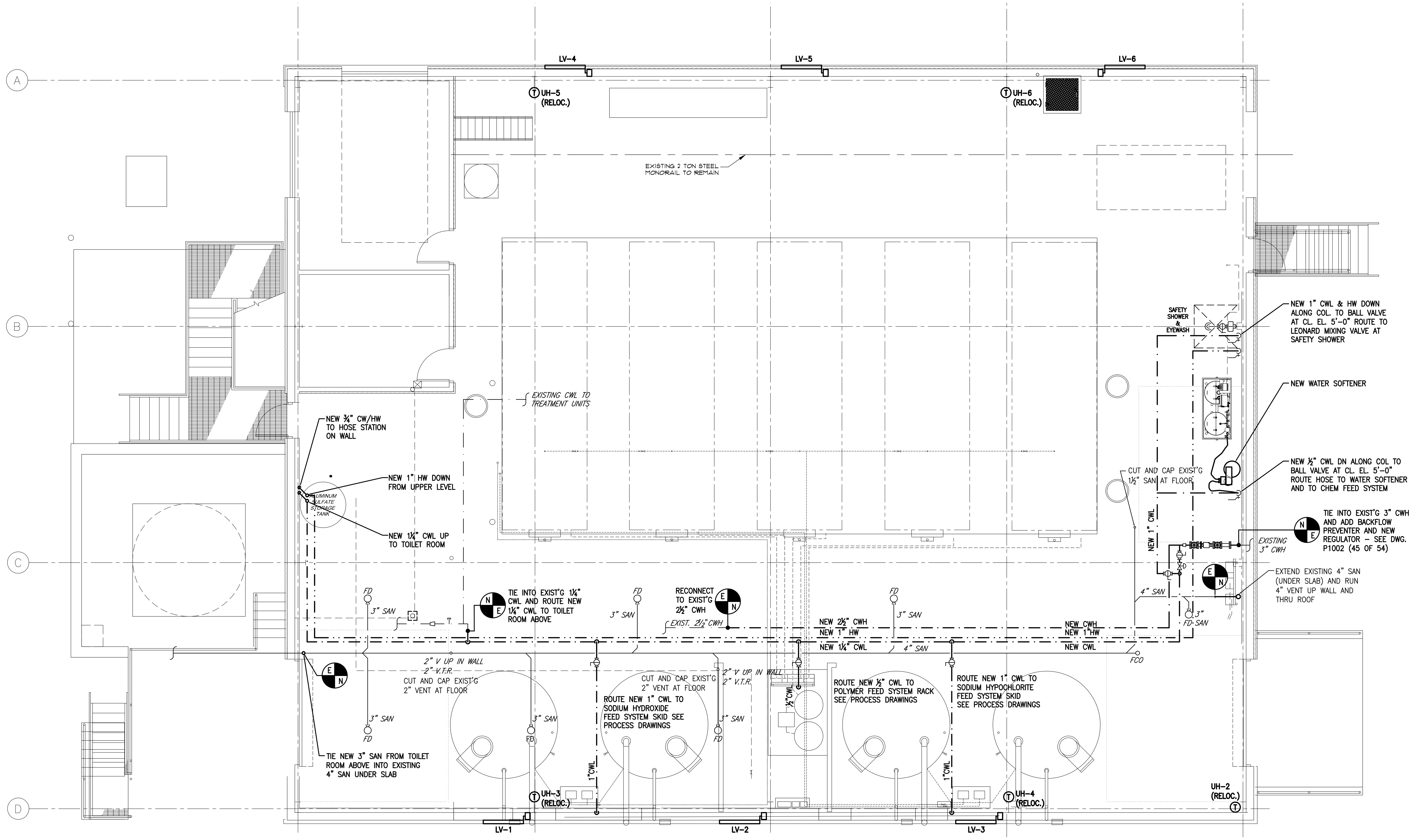
ELEVATIONS

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	3/16" = 1'-0"
DRAWN BY	HMM
APPROVED BY	SJV

M1003



LEGEND:

FD	FLOOR DRAIN
C.O.	CLEAN OUT
CWL	LOW PRESSURE CITY WATER
CWH	HIGH PRESSURE CITY WATER
CW	COLD CITY WATER – LOW PRESSURE
HW	HOT CITY WATER – LOW PRESSURE
SSEW	SAFETY SHOWER & EYE WASH STATION
SAN	SANITARY SEWER
VT	VENT
V.T.R.	VENT THRU ROOF
(N/E symbol)	NEW–TO–EXISTING TIE–IN POINT

NOTE:

IN AREAS WHERE EXISTING STRUCTURES HAVE BEEN MODIFIED OR REMOVED DUE TO BUILDING IMPROVEMENTS, ALL NEW AND EXISTING CWH, CWL AND HW AFFECTED BY THE MODIFICATIONS MUST BE RE–SUPPORTED FROM NEW STRUCTURES ACCORDING TO THE APPROPRIATE SECTION OF THE MECHANICAL SPECIFICATIONS.

0 5' 10'

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

PLUMBING NEW WORK GROUND FLOOR PLAN

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	3/16" = 1'-0"
DRAWN BY	HMM
APPROVED BY	SJV

P1001

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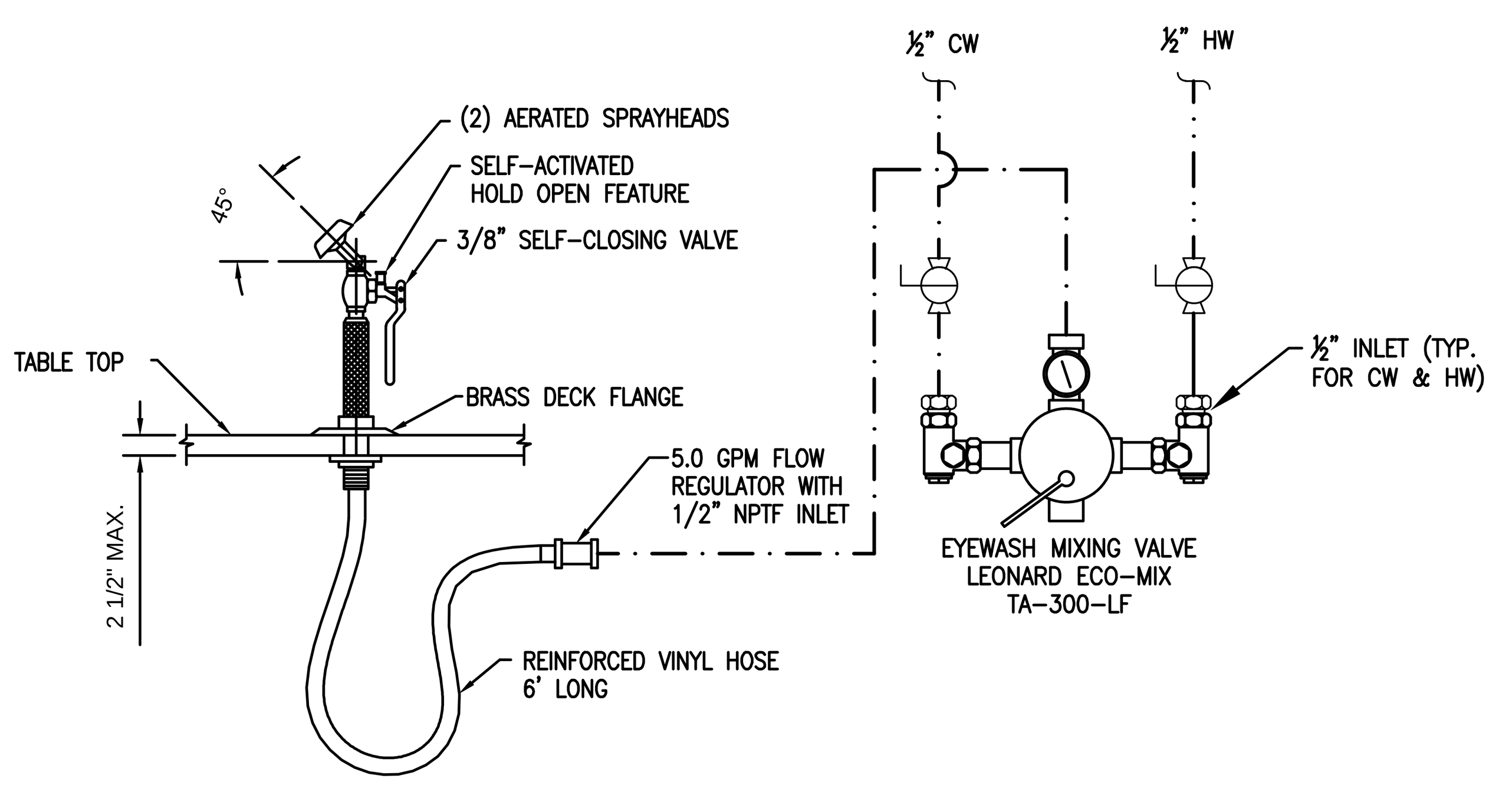
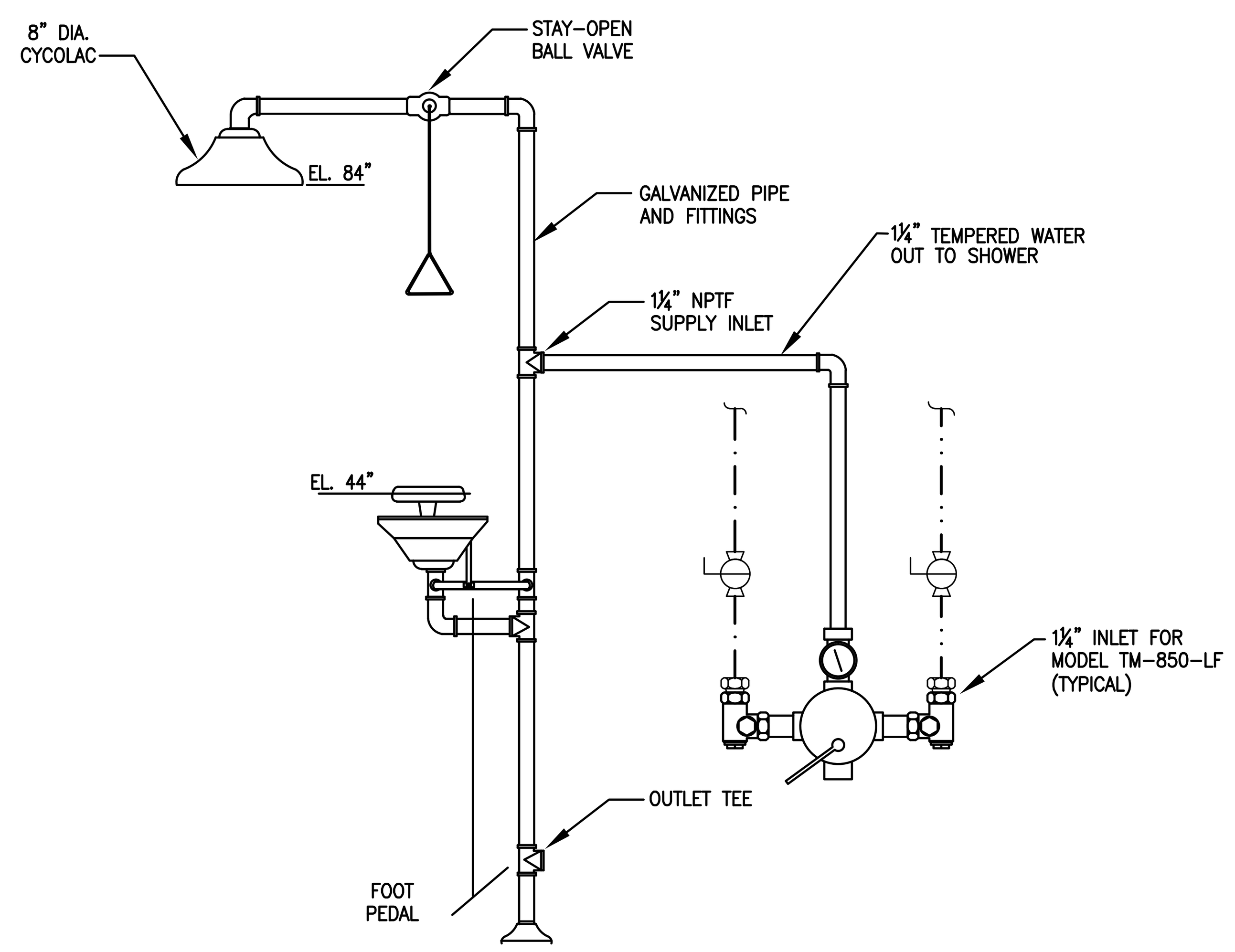


SPEAKMAN MODEL SE-927: SPEAKMAN CO., WILM., DE (302-764-9100) VALVE: 3/8" CHROME PLATED BRASS w/AUTOMATIC STAY OPEN FEATURE WHEN VALVE IS ACTIVATED. SPRAY HEADS: TWIN AERATED SPRAY HEADS w/DUST CAPS. UNIT CAN BE DECK MOUNTED ON COUNTER TOPS UP TO 2½" THICK, OR USED AS A HAND-HELD DRENCH HOSE. 5.0 GPM FLOW REGULATOR ENSURES CONSTANT FLOW UNDER VARYING PRESSURES. HOSE: 6' OF REINFORCED HOSE, 750 PSI BURST PRESSURE. SUPPLY: ½" NPTF INLET.

1 EYEWASH MIXING VALVE DETAIL



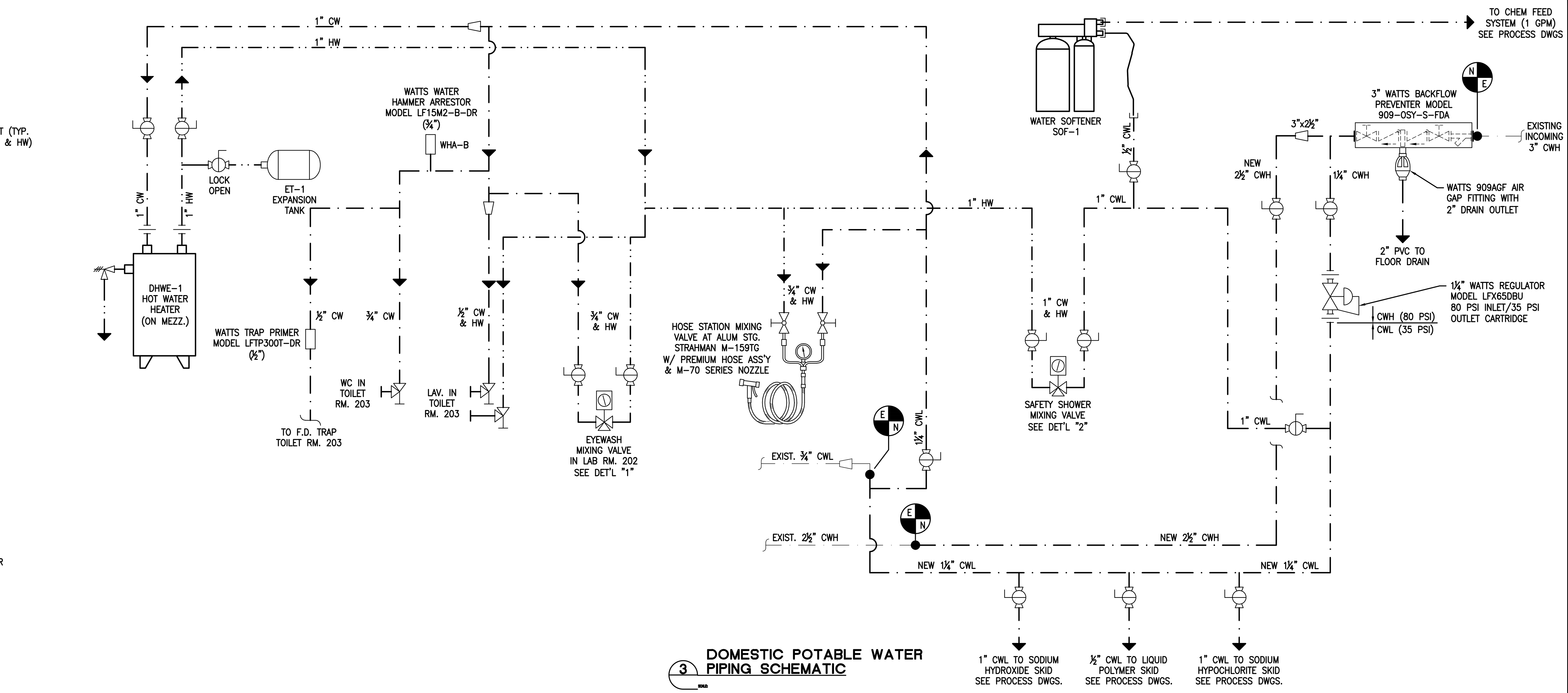
2 SAFETY SHOWER AND MIXING VALVE DETAIL

MIXING VALVE

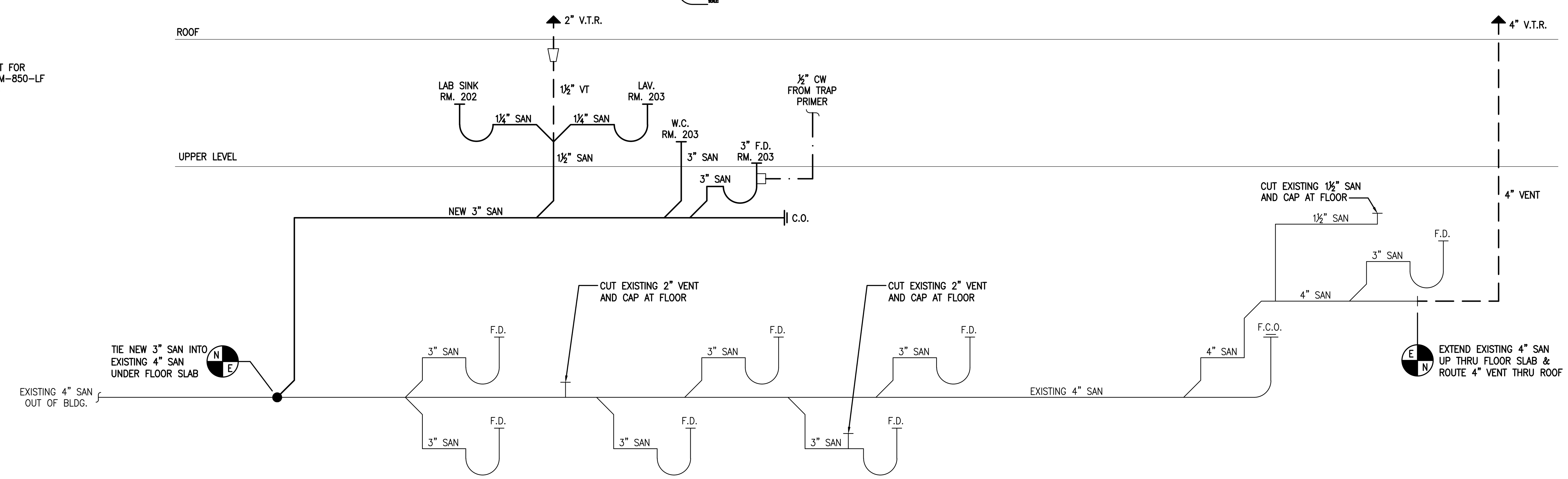
LEONARD VALVE COMPANY – MODEL TM-850-LF

COMBINATION SAFETY SHOWER/EYEWASH STATION

SAFETY SHOWER ASSEMBLY: SE-605
SHOWER HEAD: CYCOLAC YELLOW 8"ø
VALVE: 1" NPTF CHROME-PLATED BRASS STAY-OPEN VALVE ACTIVATED BY PULL ROD: 1¼" GALV. STL PIPE AND FITTING W/FLOOR FLANGE PAINTED SAFETY GREEN
EYE/FACE WASH: SE-480 HAND AND FOOT OPERATED



3 DOMESTIC POTABLE WATER PIPING SCHEMATIC



4 SANITARY WASTE/VENT RISER DIAGRAM

DWHE # DOMESTIC WATER HEATER – ELECTRIC – SCHEDULE

REV #	EQUIPMENT PIECE NO.	NEW/ EXIST'G	LOCATION	MODEL	MFGR.	MAKE-UP WTR GAL/HR	TANK SIZE GAL	NO. OF ELEMENTS	KW PER ELEMENT	TOTAL KW	VOLTS/ PHASE/HZ	WEIGHT SHIPPING	WEIGHT OPERAT'G	REMARKS
–	DWHE-1	NEW	MEZZANINE	E32-50S-3	BRADFORD-WHITE	37@100 DEG RISE	50	2	4.5	9.0	208/1/60	137	485	ELECTRIFLEX MD SERIES

ET # EXPANSION TANK SCHEDULE

REV #	EQUIPMENT PIECE NO.	NEW/ EXIST'G	LOCATION	MODEL	TYPE	MFGR.	SYSTEM	DIMENSIONS LENGTH/HEIGHT	TANK VOLUME (GALLONS)	ACCEPTANCE VOLUME (GALLONS)	REMARKS
–	ET-1	NEW	MEZZANINE	DETA-5	BLADDER	WATTS	DOM HOT WATER	10"ø/14"L	3.5	2.3	PRE-CARGED TO 40 PSIG

SOF # WATER SOFTENER SCHEDULE

REV #	EQUIPMENT PIECE NO.	NEW/ EXIST'G	LOCATION	MFGR.	MODEL	TYPE	SYSTEM	OVERALL HEIGHT (IN.)	MEDIA TANK (ø"xHGT")	SALT TANK (ø"xHGT")	EXCHANGE CAPACITY (GRAINS @ LB'S)			SALT CAP. (LBS)	RATED FLOW @ ΔP	TOTAL HARDNESS (GPG)	TOTAL IRON (PPM)	OPER. PRESS. (PSIG)	OPER. TEMP. (°F)	ELECTRICAL REQUIREMENTS	ELECTRICAL CONSUMPTION	DRAIN FLOW (GPM)	RECHARGE TIME (MIN.)	RECHARGE CONSUM'N (GPM)
	SOF-1	NEW	GROUND FLR.	CULLIGAN	HE-9	SALT DOSAGE	DOM COLD WATER	56	9x48	18x43	17854 @ 4	27108 @ 8	31736 @ 12	375	9GPM@11PSIG	75	5	20-120	33-120	24V/60Hz	8.4-21.6 WATTS	2.5	78	47

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CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

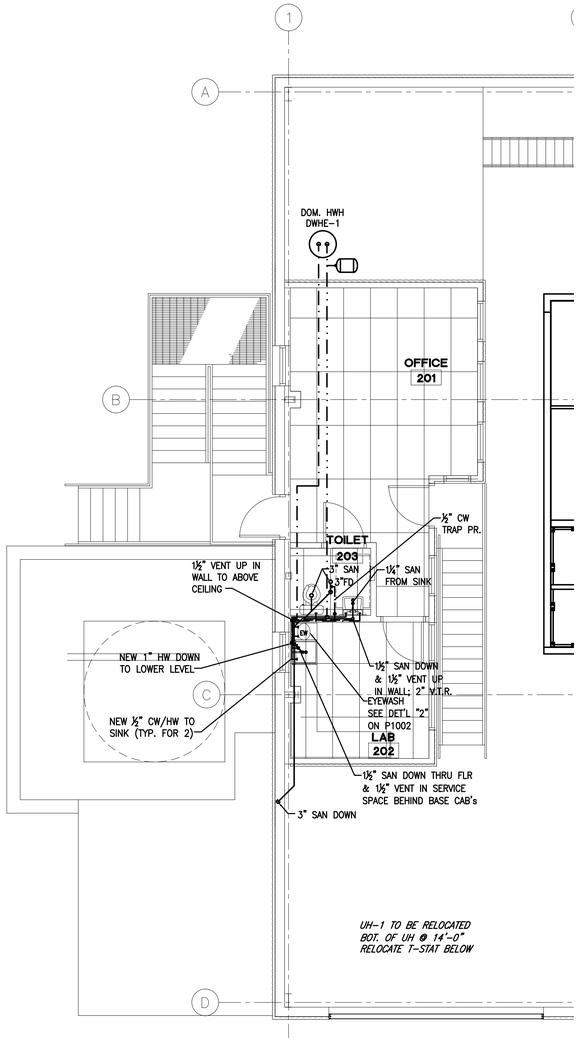
PLUMBING NEW WORK SCHEMATICS AND SCHEDULES

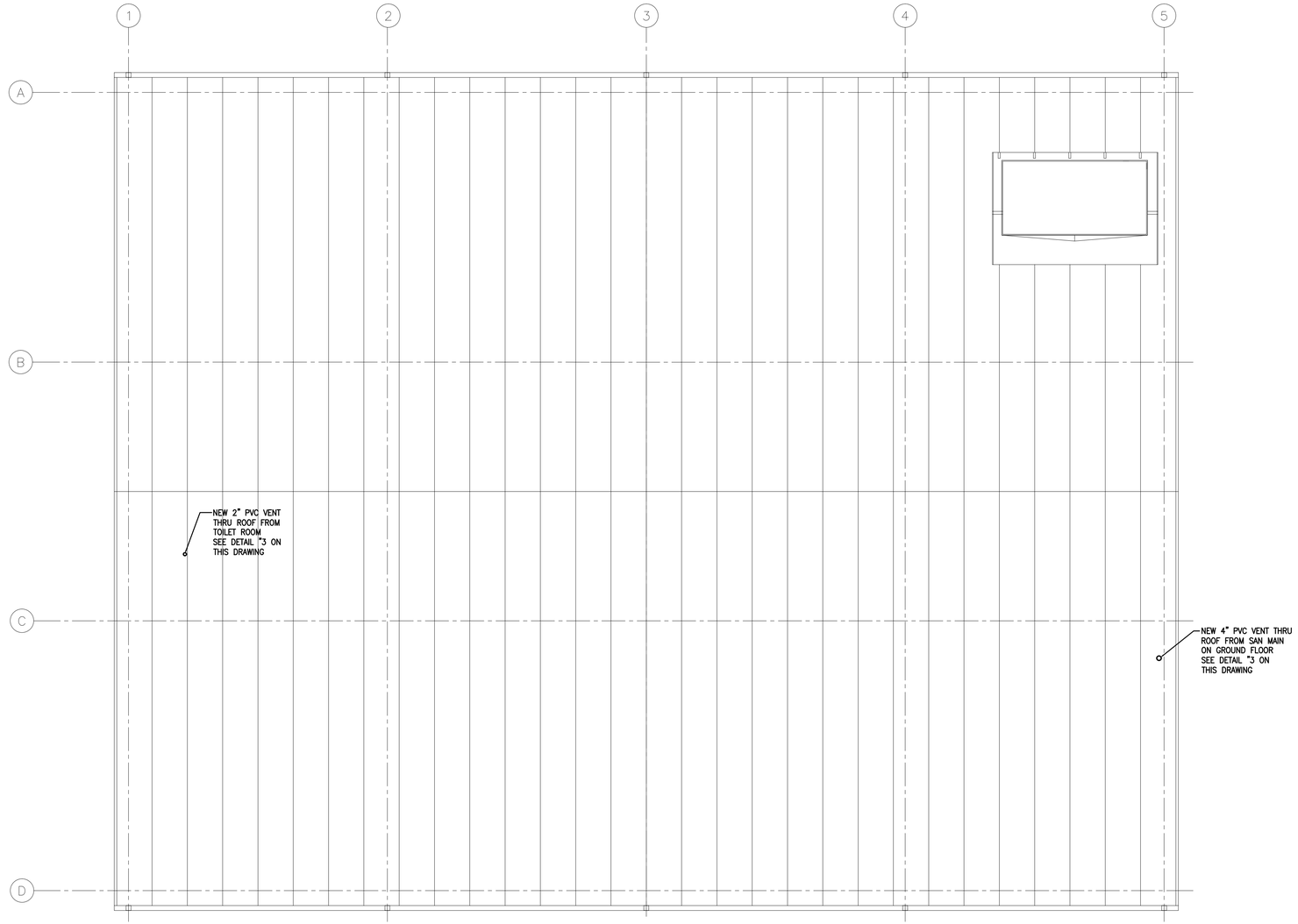
CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	HMM
APPROVED BY	SJV

P1002



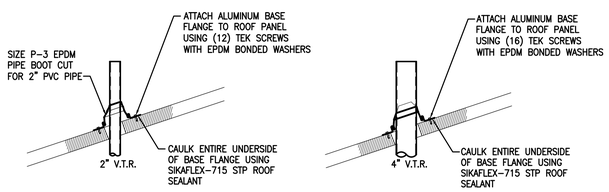


1 UPPER LEVEL PLAN PLUMBING PIPING

SCALE: 3/16" = 1'-0"

2 ROOF PLAN PLUMBING PIPING

SCALE: 3/16" = 1'-0"



3 PENETRATION DETAIL VENT PIPE THRU ROOF

SCALE: N.T.S.

0 5' 10'

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JAMES E. HARDIMAN No. 6304 PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

PLUMBING NEW WORK MEZZ-ROOF PLAN

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES

220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	MWF/BWM
APPROVED BY	DPB

P1003

SHEET 46 OF 54

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W:\PROJECTS\CNEW\CNEW1612\Curtis WTP Improvements\DESIGN\MMECH NEW WORK.dwg PLOTTED: 4/13/2017 3:33 PM, BY: Brian Miller PLOTSTYLE: NCYW.ctb PROJECT STATUS: CONSTRUCTION PLANS

EXHAUST FAN SCHEDULE

REV #	EQUIPMENT PIECE NO.	NEW/ EXIST'G	LOCATION	AREA SERVED	MODEL	MFGR.	CFM	TOTAL S.P.	RPM	MAX. BHP	HP	VOLTS/ PHASE/HZ	ARRANGEMENT	ROTATION	REMARKS
–	EF–1	NEW	WALL GABLE	TREATMENT	36EP420D08	LOREN COOK	9706	0.25"	860	1.14	1	460/3/60	DIRECT DRIVE	–	460 LBS. SHIPPING WEIGHT; PACKAGED FAN – SEE NOTES 1, 2 & 3
–	EF–2	NEW	WALL GABLE	TREATMENT	36EP420D08	LOREN COOK	9706	0.25"	860	1.14	1	460/3/60	DIRECT DRIVE	–	460 LBS. SHIPPING WEIGHT; PACKAGED FAN – SEE NOTES 1, 2 & 3
–	EF–3	NEW	TOILET CLG	TOILET	SP–A110	GREENHECK	75	0.25	950	058 AMPS	49 WATTS	120/1/60	–	–	WIRED TO LIGHT SWITCH; W/ ROUND DUCT CONNECTOR AND OUTSIDE WALL DISCHARGE – SEE NOTE 2

NOTE 1: PACKAGED FAN SHALL INCLUDE STANDARD EXTRUDED ALUMINUM AIRFOIL PROP FAN IN A GALVANIZED STEEL ENCLOSURE WITH INTEGRAL MOUNTING FLANGE AND WEATHER RESISTANT SHUTTER.
NOTE 2: WEATHER RESISTANT SHUTTER SHALL BE PAINTED TO MATCH COLOR OF BUILDING SIDING. SEE ARCHITECTURAL DRAWINGS FOR COLOR.
NOTE 3: FAN SHALL BE PROVIDED WITH LINE VOLTAGE THERMOSTAT.

LOUVER SCHEDULE

REV #	EQUIPMENT PIECE NO.	NEW/ EXIST'G	LOCATION	MODEL	MFGR.	MATERIAL	NO. OF LOUVER SETS PER ASSEMBLY	SIZE HEIGHT	SIZE LENGTH	SIZE DEPTH	ACTUAL SQ. FT.	% OF FACE AREA	FIXED BLADE TYPE	AIR FLOW CFM	VELOCITY FPM	S.P. DROP	SCREEN TYPE	REMARKS
–	LV–1	NEW	WALL	ELC6375DAX	RUSKIN	ALUMINUM	1	30	45	6	9.375	42	DRAINABLE	3333	841	0.10	INSECT SCR.	SEE NOTES 1 & 2
–	LV–2	NEW	WALL	ELC6375DAX	RUSKIN	ALUMINUM	1	30	45	6	9.375	42	DRAINABLE	3333	841	0.10	INSECT SCR.	SEE NOTES 1 & 2
–	LV–3	NEW	WALL	ELC6375DAX	RUSKIN	ALUMINUM	1	30	45	6	9.375	42	DRAINABLE	3333	841	0.10	INSECT SCR.	SEE NOTES 1 & 2
–	LV–4	NEW	WALL	ELC6375DAX	RUSKIN	ALUMINUM	1	30	45	6	9.375	42	DRAINABLE	3333	841	0.10	INSECT SCR.	SEE NOTES 1 & 2
–	LV–5	NEW	WALL	ELC6375DAX	RUSKIN	ALUMINUM	1	30	45	6	9.375	42	DRAINABLE	3333	841	0.10	INSECT SCR.	SEE NOTES 1 & 2
–	LV–6	NEW	WALL	ELC6375DAX	RUSKIN	ALUMINUM	1	30	45	6	9.375	42	DRAINABLE	3333	841	0.10	INSECT SCR.	SEE NOTES 1 & 2
–	LV–7	NEW	WALL	ELF375DX	RUSKIN	ALUMINUM	1	12	12	4	–	–	DRAINABLE	150	–	–	INSECT SCR.	INTAKE LOUVER FOR ERV–1 – SEE NOTE 2
–	LV–8	NEW	WALL	ELF375DX	RUSKIN	ALUMINUM	1	12	12	4	–	–	DRAINABLE	150	–	–	INSECT SCR.	EXHAUST LOUVER FOR ERV–1 – SEE NOTE 2

NOTE 1: LOUVER SHALL BE PROVIDED COMPLETE WITH EXTERNAL INSECT SCREEN AND 120vac TWO–POSITION SPRING–RETURN ACTUATOR.
NOTE 2: LOUVER SHALL BE PAINTED TO MATCH COLOR OF BUILDING SIDING. SEE ARCHITECTURAL DRAWINGS FOR COLOR.

DAMPER SCHEDULE

REV #	EQUIPMENT PIECE NO.	MODEL	MFGR.	SIZE	TYPE	NO. OF DAMPERS PER ASSEMBLY	MANUAL OR AUTO	ACTUATOR MODEL	ACTUATOR MFGR.	PNEUMATIC OR ELECTRIC	ACTUATOR MOTOR OPERATOR VOLTAGE	ACTUATOR MOTOR OPERATOR OPERATION	ACTUATOR MOTOR OPERATOR FAIL POS	MATERIAL BLADE	MATERIAL SHAFT	MATERIAL LINKAGE	TYPE OF OPERATNG BLADE SEAL	REMARKS
–	DAMP–1	NEW	–	12x12	INTAKE	1	AUTO	–	–	ELECT	120/1/60	–	OPEN	–	–	–	–	–

CONDENSER – AIR COOLED SCHEDULE

REV #	EQUIPMENT PIECE NO.	NEW/ EXIST'G	LOCATION	MODEL	MFGR.	NOMINAL TONS	OUTDOOR AIR HEAT,WB	OUTDOOR AIR COOL, DB	COND FIN MATERIAL	FAN # @ HP	COMPR. MOTOR KW	VOLTS/ PHASE/HZ	REFRIGERANT TYPE AND CHARGE	WEIGHT SHIPPING	WEIGHT OPERAT'G	REMARKS
–	CU–1	NEW	OUTSIDE	ARUN038GSS4	LGE	3	–4 – 61°F	23 – 122°F	–	2 @ 5	3.52	208–230/1/60	R410A–6.6 LBS.	218	207	SERVING UPPER LEVEL OFFICE AND LAB
–	CU–2	NEW	OUTSIDE	LS240HLV	LGE	2	–4 – 65°F	14 – 118°F	–	1	2.38	208–230/1/60	R410A–4.85 LBS.	133	125	SERVING ECR

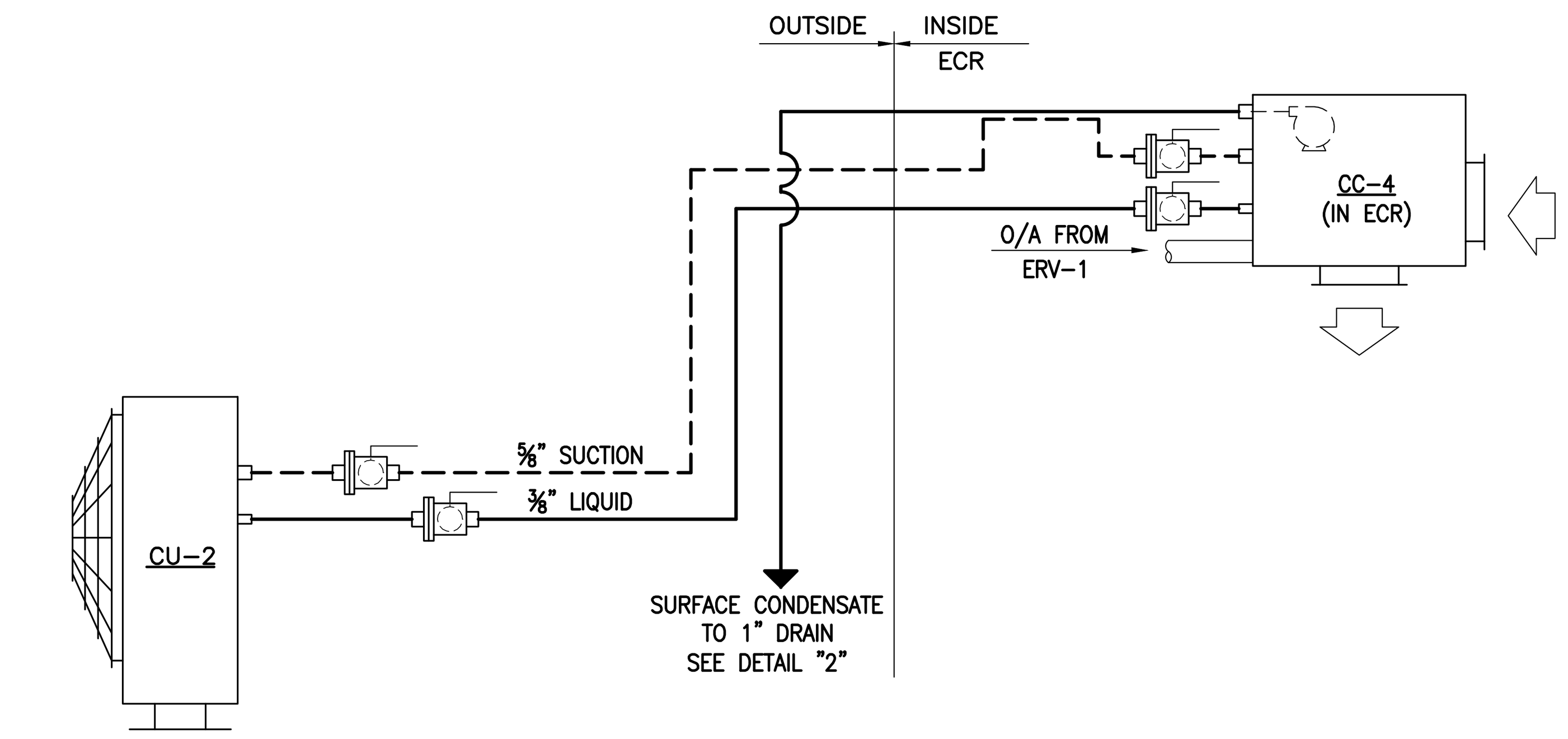
ENERGY RECOVERY VENTILATOR

REV #	EQUIPMENT PIECE NO.	NEW/ EXIST'G	LOCATION	MODEL	MFGR.	CFM	SUPPLY AIR FAN RPM	BHP	HP	VOLTS/ PHASE/HZ	FLA	BHP	HP	INPUT WATTS@CFM	ESP (INCHES WC)	FILTERS TYPE	FILTERS No.	FILTERS SIZE	NOMINAL ARI NET EFFECTIVENESS (%) COOLING	HEATING	SHIPPING WEIGHT	OPER. WEIGHT	REMARKS
–	ERV–1	NEW	UPPER LEVEL	EV200	RENEWAIRE	150	–	–	0.1	120/1/60	1.5	NA	NA	157@181	0.6	MERV8	2	10.5x21.4x1	61	75	110	68	WITH FRESH AIR AND EXHAUST AIR OUTSIDE LOUVERS

CEILING CASSETTTE SCHEDULE

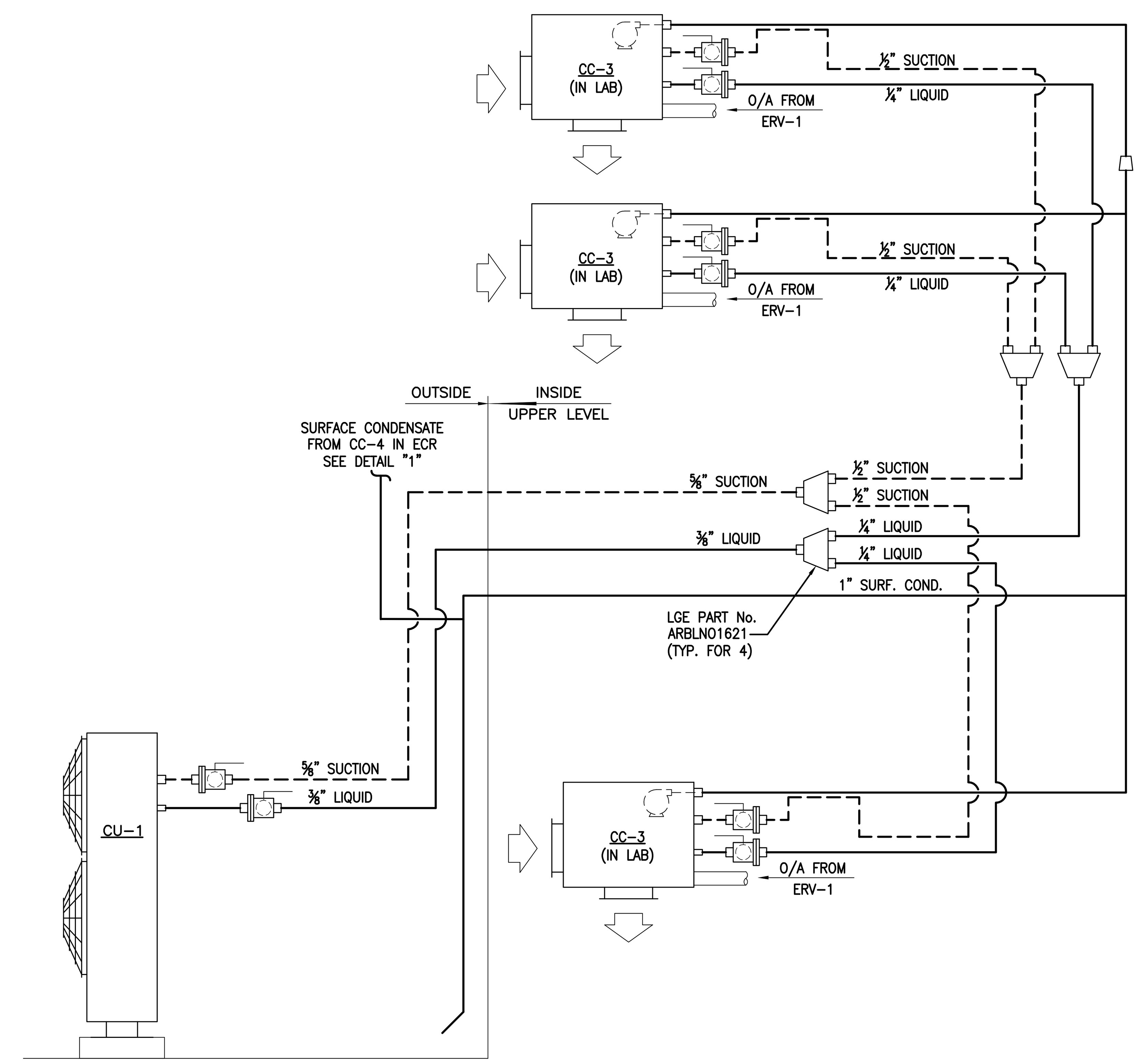
REV #	EQUIPMENT PIECE NO.	NEW/ EXIST'G	LOCATION	MODEL	MFGR.	TOTAL CFM	CFM O/A	# OF FANS	SIZE	EXT. S.P.	COND PUMP	HP	V/PH/HZ	INPUT CURRENT (AMPS)	COOLING SECTION AIR TEMPERATURE EDB	EWB	LDB	LWB	REFRIGERANT TYPE	CONT	CHG.	–	SENS. MBH	TOTAL MBH	LIQ. CONN.	HEATING SECTION AIR TEMPERATURE EDB	EWB	LDB	LWB	–	–	TOTAL MBH	VAPOR CONN.	FILTERS P	S	SIZE	WEIGHT SHIPPING	REMARKS
–	CC–1	NEW	OFF. 201	–	LGE	283	–	1	24x24	–	1	–	208–230/1/60	–	80.6°F	67.1°F	–	–	R410A	EEV	–	–	9.6	9.6	1/4"	68°F	56.8°F	–	–	–	–	10.9	1/2"	1*	1*	–	36	MODEL ARNU093TRC4
–	CC–2	NEW	OFF. 201	–	LGE	283	–	1	24x24	–	1	–	208–230/1/60	–	80.6°F	67.1°F	–	–	R410A	EEV	–	–	9.6	9.6	1/4"	68°F	56.8°F	–	–	–	–	10.9	1/2"	1*	1*	–	36	MODEL ARNU093TRC4
–	CC–3	NEW	LAB 202	–	LGE	396	–	1	24x24	–	1	–	208–230/1/60	–	80.6°F	67.1°F	–	–	R410A	EEV	–	–	19.1	19.1	1/4"	68°F	56.8°F	–	–	–	–	21.5	1/2"	1*	1*	–	40	MODEL ARNU183TQC4
–	CC–4	NEW	ECR	–	LGE	396	–	1	13x47	–	1	–	208–230/1/60	–	80°F	67°F	–	53°F	R410A	EEV	–	–	–	22	3/8"	70°F	60°F	86°F	–	–	–	27	5/8"	1*	1*	–	40	MODEL LSN240HLV; WALL MOUNTED

* FILTERS: P (PRIMARY) = WASHABLE; S (SECONDARY) = PLASMA



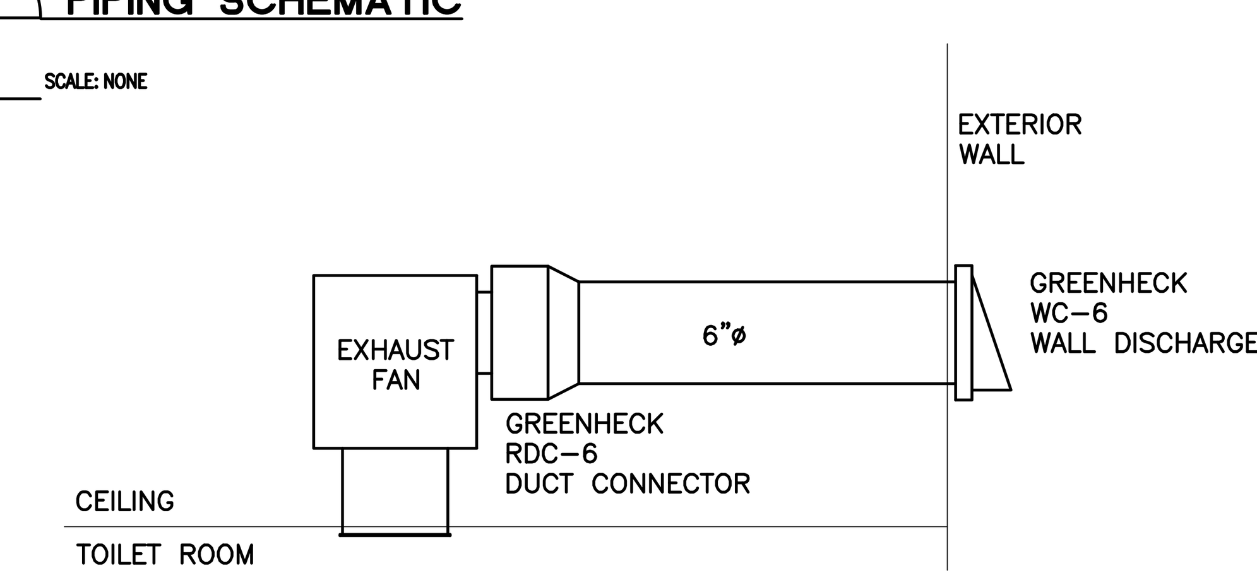
1 CU-2 REFRIGERANT PIPING PIPING SCHEMATIC

SCALE: NONE



2 CU-1 REFRIGERANT PIPING PIPING SCHEMATIC

SCALE: NONE



3 TOILET EXHAUST FAN AIR FLOW DIAGRAM

SCALE: NONE

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JAMES E. TARDONA LICENSE No. 6304 DELAWARE PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

EQUIPMENT SCHEDULES AND DETAILS

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	HMM
APPROVED BY	SJV

M1004

CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL COORDINATE WORK ACTIVITIES WITH THE CITY AND SHALL NOT INTERFERE WITH WATER TREATMENT PLANT OPERATION UNLESS SUITABLE ARRANGEMENTS HAVE BEEN MADE NOT LESS THAN FIVE (5) DAYS IN ADVANCE.
2. AT NO TIME SHALL THE CONTRACTOR PERFORM TREATMENT PLANT OPERATION WITHOUT DIRECT SUPERVISION OF THE LICENSED CITY OPERATORS. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE HIS WORK WITH THE CITY OPERATION STAFF.
3. SHOULD ANY OF THE CONTRACTOR'S OPERATIONS RESULT IN A REGULATORY AGENCY CITATION AGAINST THE OWNER, THE CONTRACTOR SHALL BEAR THE FULL RESPONSIBILITY OF THIS CITATION.
4. SHOULD THE CONTRACTORS ACTIVITIES RESULT IN THE DEGRADATION OF FILTER SYSTEM PERFORMANCE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PAYMENT OF ANY FINES OR ADDITIONAL COSTS RESULTING FROM SUCH DEGRADATION OF FILTER SYSYEM PERFORMANCE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS IN THE FIELD. ANY DISCREPANCIES BETWEEN THE CONTRACT DRAWINGS AND THE CONTRACTOR'S FIELD MEASUREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
6. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS IDENTIFYING ACTUAL FIELD MEASUREMENTS AND THE LAYOUT FOR THE PROPOSED EQUIPMENT AND MATERIALS FOR REVIEW BY THE ENGINEER.
7. CHEMICAL STORAGE TANKS SHALL BE FURNISHED IN A SIZE TO BE BROUGHT THROUGH THE GARAGE DOOR OPENINGS AND SHALL BE ERECTED IN PLACE WITH THE PROPER ORIENTATION TO ALLOW FULL ACCESS TO THE MANWAY OPENING AND PIPE EXTENSIONS THROUGH THE EXTERIOR WALL FOR THE FILL AND VENT LINES.
8. CHEMICAL STORAGE TANKS SHALL BE FURNISHED AND INSTALLED WITH STABILIZATION ANCHORING SYSTEM TO PREVENT MOVEMENT OR TIPPING.
9. ALL METALS IN CONTACT WITH CONCRETE SHALL BE COATED WITH BITUMASTIC PAINT TO PREVENT CORROSION.
10. VENT PIPING SHALL BE INDEPENDENT FOR EACH CHEMICAL STORAGE TANK AND SHALL BE INSTALLED FROM TOP OF TANK THROUGH EXTERIOR WALL WITH SCREENED OPENING.
11. BULK CHEMICAL FILL PIPES SHALL BE INSTALLED FROM TOP OF TANK TO EXTERIOR WALL THEN DOWN TO 8" ABOVE FLOOR LEVEL BEFORE PENETRATION THROUGH THE EXTERIOR WALL. FITTINGS SHALL MATCH HOSES AND CONNECTIONS USED BY BULK DELIVERY SUPPLIER.

PIPING NOTES

1. CONTRACTOR SHALL REVIEW PIPING LAYOUT WITH THE OWNER PRIOR TO INSTALLATION TO VERIFY CLEARANCE AND WORKSPACE AREAS.
2. PROCESS AND CHEMICAL PIPING SHALL BE INSTALLED WITH PIPE SUPPORTS AND MOUNTING BRACKETS TO KEEP PIPES IN PLACE AND PREVENT JOINT SEPARATION.

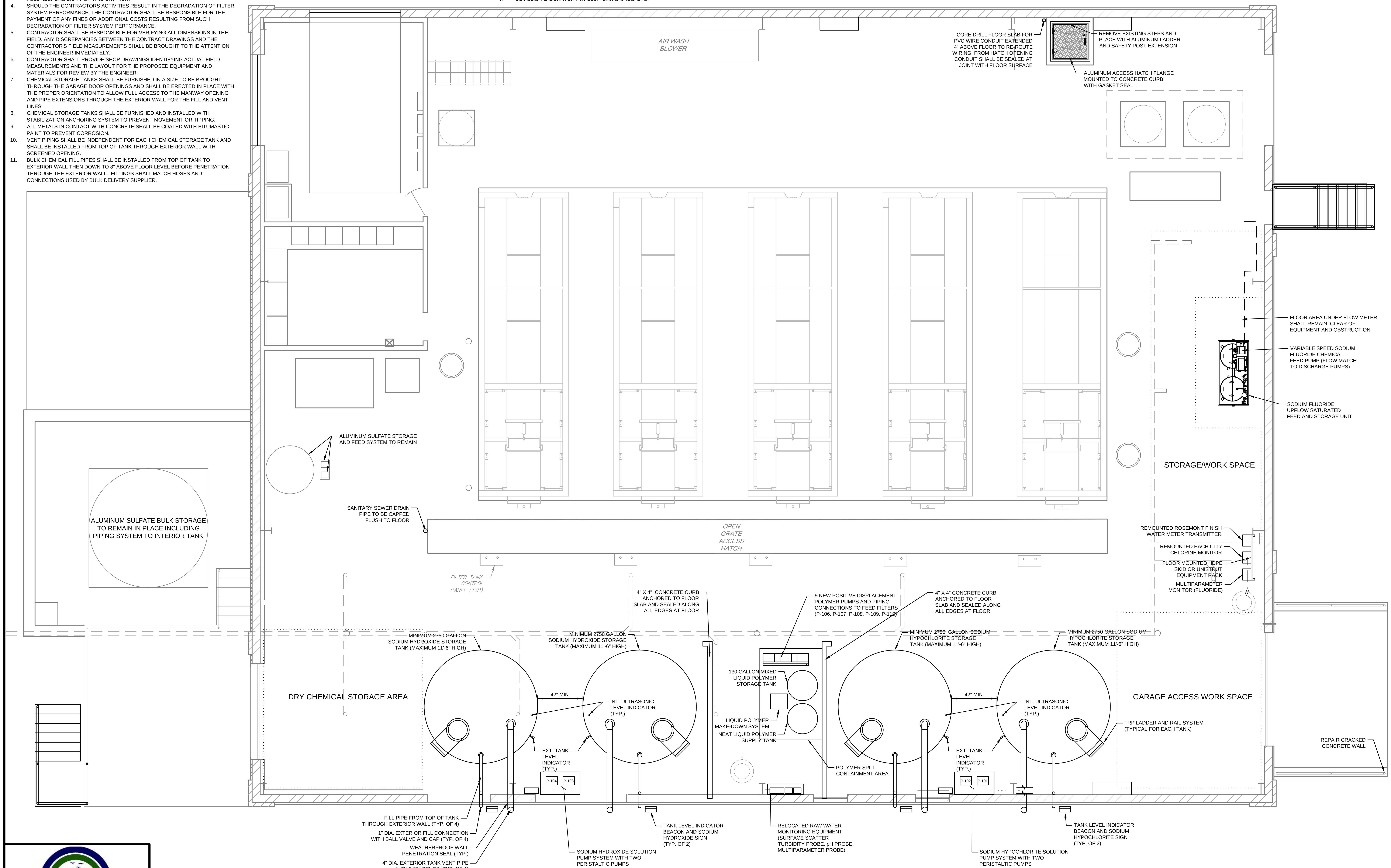
TANK NOTES

1. THE SODIUM HYPOCHLORITE AND SODIUM HYDROXIDE TANKS SHALL BE PROVIDED WITH EXTERNAL FLOAT LEVEL INDICATOR AND AN INTERNAL ULTRASONIC LEVEL SENSOR.

SEQUENCE OF CONSTRUCTION

THE SEQUENCE PROVIDED BELOW IS A GENERAL GUIDE. THE SELECTED CONTRACTOR SHALL SUBMIT A DETAILED SEQUENCE OF CONSTRUCTION TO THE CITY PRIOR TO THE PRE-CONSTRUCTION MEETING.

1. MOBILIZE AND SETUP
2. INSTALL TEMPORARY CONTAINMENT ENCLOSURE FOR THE 5 FILTER UNITS
3. INSTALL TEMPORARY BYPASS CARRY WATER LINE FOR LIQUID ALUMINUM SULFATE AND SODIUM HYPOCHLORITE
4. INSTALL SODIUM HYPOCHLORITE TANK AND TEMPORARY CHEMICAL FEED SYSTEM
5. DEMOLISH UNUSED EQUIPMENT AND CONDUIT.
6. DEMOLISH AND INSTALL NEW ROOFING SYSTEM AND ROOF HATCH
7. DEMOLISH LABORATORY WALLS, FURNISHINGS, ETC.
8. DEMOLISH OFFICE AND STORAGE ROOM
9. DEMOLISH CHLORINE ROOM, CHEMICAL ROOM, AND AREAS NEAR MEZZANINE WITH TEMPORARY MEZZANINE SUPPORTS
10. INSTALL FOUNDATION AND SUPPORTS FOR MEZZANINE STRUCTURAL SUPPORTS
11. INSTALL INTERIOR STAIR SYSTEM TO MEZZANINE
12. DEMOLISH AND INSTALL NEW WALL SIDING SYSTEM, STAIR SYSTEMS, AND EXTERIOR DOORS
13. INSTALL FANS AND LOUVERS
14. INSTALL SODIUM HYDROXIDE TANK
15. INSTALL SODIUM HYPOCHLORITE, SODIUM HYDROXIDE, LIQUID POLYMER, AND FLUORIDE PUMP SKID SYSTEMS
16. INSTALL CHEMICAL PIPING SYSTEM AND CARRY WATER PIPING
17. INSTALL LIQUID POLYMER BLENDING AND FEED SYSTEM
18. INSTALL CONDUIT AND WIRING FOR POWER AND CONTROLS FOR CHEMICAL FEED
19. DRAIN CLEAR WELL
20. INSTALL CHEMICAL FEED PIPING TO CLEAR WELL.
21. REPLACE ACCESS HATCH AND LADDER
22. DISINFECT CLEAR WELL
23. REFILL CLEAR WELL AND RETURN TO OPERATION.
24. CONSTRUCT OFFICE AND LABORATORY SPACE WALLS, DOORS, AND WINDOW IMPROVEMENTS
25. INSTALL ELECTRICAL CONDUITS AND WIRING FOR OFFICE AND LAB
26. INSTALL PLUMBING AND HVAC FOR OFFICE AND LAB.
27. INSTALL FURNISHINGS AND FINISHES IN OFFICE AND LAB
28. PAINT AND LABEL PIPING AND CONDUIT
29. PREPARE AS-BUILT CONDITION DRAWINGS



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121 Continental Drive, Suite 207
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ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

BRIAN W. MILLER, LICENSED PROFESSIONAL ENGINEER, DELAWARE, No. 18876, 2017-11-17

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

PROCESS EQUIPMENT PLAN

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

REVISIONS			
NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	1/4" = 1'-0"
DRAWN BY	MWF/BWM
APPROVED BY	DPB

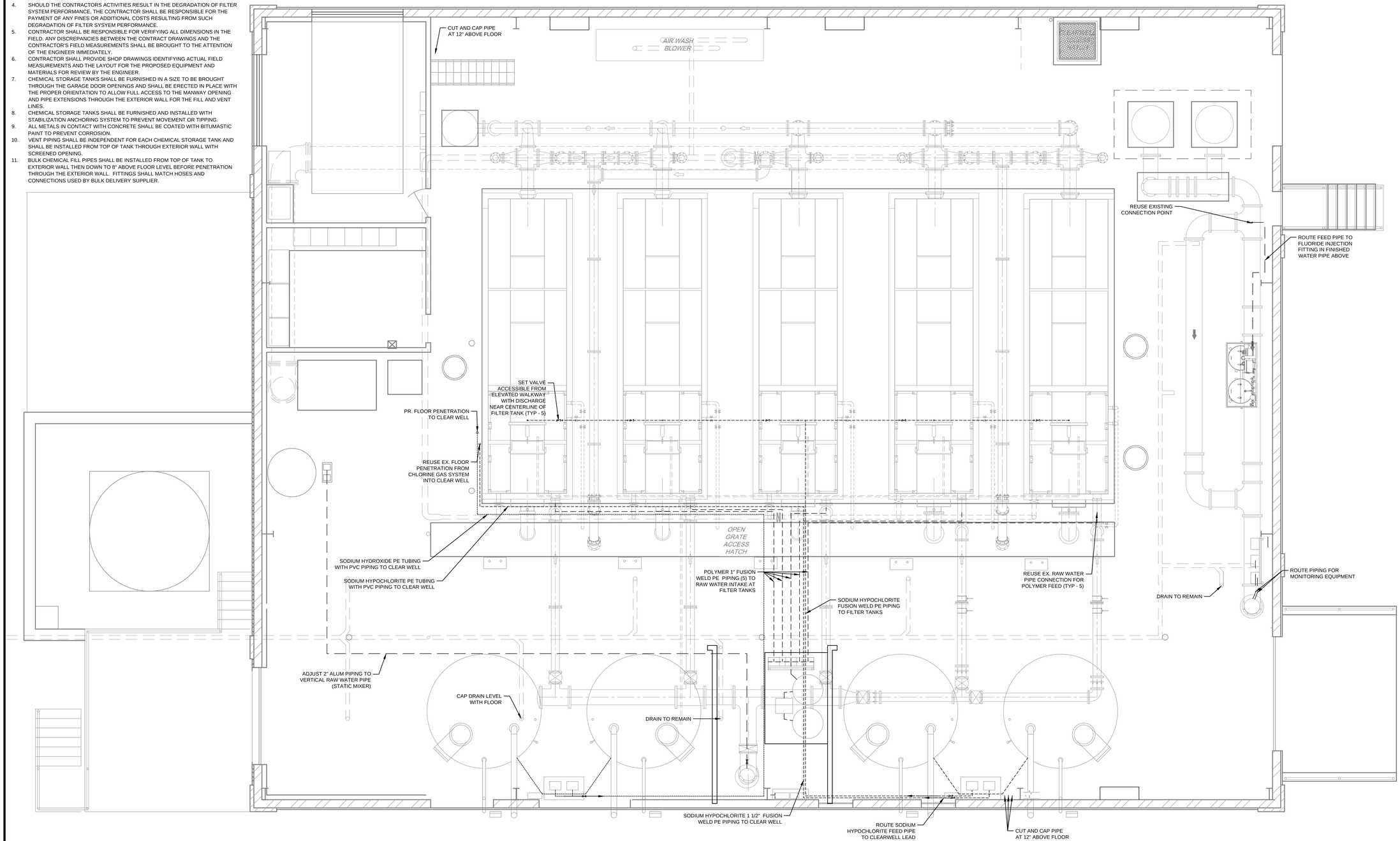
CM1701

CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL COORDINATE WORK ACTIVITIES WITH THE CITY AND SHALL NOT INTERFERE WITH WATER TREATMENT PLANT OPERATION UNLESS SUITABLE ARRANGEMENTS HAVE BEEN MADE NOT LESS THAN FIVE (5) DAYS IN ADVANCE.
2. AT NO TIME SHALL THE CONTRACTOR PERFORM TREATMENT PLANT OPERATION WITHOUT DIRECT SUPERVISION OF THE LICENSED CITY OPERATORS. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE HIS WORK WITH THE CITY OPERATION STAFF.
3. SHOULD ANY OF THE CONTRACTOR'S OPERATIONS RESULT IN A REGULATORY AGENCY CITATION AGAINST THE OWNER, THE CONTRACTOR SHALL BEAR THE FULL RESPONSIBILITY OF THIS CITATION.
4. SHOULD THE CONTRACTORS ACTIVITIES RESULT IN THE DEGRADATION OF FILTER SYSTEM PERFORMANCE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PAYMENT OF ANY FINES OR ADDITIONAL COSTS RESULTING FROM SUCH DEGRADATION OF FILTER SYSYEM PERFORMANCE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS IN THE FIELD. ANY DISCREPANCIES BETWEEN THE CONTRACT DRAWINGS AND THE CONTRACTOR'S FIELD MEASUREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
6. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS IDENTIFYING ACTUAL FIELD MEASUREMENTS AND THE LAYOUT FOR THE PROPOSED EQUIPMENT AND MATERIALS FOR REVIEW BY THE ENGINEER.
7. CHEMICAL STORAGE TANKS SHALL BE FURNISHED IN A SIZE TO BE BROUGHT THROUGH THE GARAGE DOOR OPENINGS AND SHALL BE ERECTED IN PLACE WITH THE PROPER ORIENTATION TO ALLOW FULL ACCESS TO THE MANWAY OPENING AND PIPE EXTENSIONS THROUGH THE EXTERIOR WALL FOR THE FILL AND VENT LINES.
8. CHEMICAL STORAGE TANKS SHALL BE FURNISHED AND INSTALLED WITH STABILIZATION ANCHORING SYSTEM TO PREVENT MOVEMENT OR TIPPING.
9. ALL METALS IN CONTACT WITH CONCRETE SHALL BE COATED WITH BITUMASTIC PAINT TO PREVENT CORROSION.
10. VENT PIPING SHALL BE INDEPENDENT FOR EACH CHEMICAL STORAGE TANK AND SHALL BE INSTALLED FROM TOP OF TANK THROUGH EXTERIOR WALL WITH SCREENED OPENING.
11. BULK CHEMICAL FILL PIPES SHALL BE INSTALLED FROM TOP OF TANK TO EXTERIOR WALL THEN DOWN TO 8" ABOVE FLOOR LEVEL BEFORE PENETRATION THROUGH THE EXTERIOR WALL. FITTINGS SHALL MATCH HOSES AND CONNECTIONS USED BY BULK DELIVERY SUPPLIER.

PIPING NOTES

1. CONTRACTOR SHALL REVIEW PIPING LAYOUT WITH THE OWNER PRIOR TO INSTALLATION TO VERIFY CLEARANCE AND WORKSPACE AREAS.
2. CHEMICAL FEED PIPING SHALL BE CONSTRUCTED OF DOUBLE WALL PVC/CPVC WITH A CLEAR OUTER PIPE FOR ALL OVERHEAD PIPING.
3. PROCESS AND CHEMICAL PIPING SHALL BE INSTALLED WITH PIPE SUPPORTS AND MOUNTING BRACKETS TO KEEP PIPES IN PLACE AND PREVENT JOINT SEPARATION.
4. POLYMER FEED PIPING SHALL BE REPLACED TO THE EXTENT NECESSARY TO CONNECT THE NEW POLYMER FEED SYSTEM IN PLACE.



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BRIAN W. MILLER LICENSED DELAWARE PROFESSIONAL ENGINEER No. 18876 2017-11-21

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

PROPOSED CHEMICAL PIPING

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	1/4" = 1'-0"
DRAWN BY	MWF/BWM
APPROVED BY	DPB

CM1702

SHEET 49 OF 54

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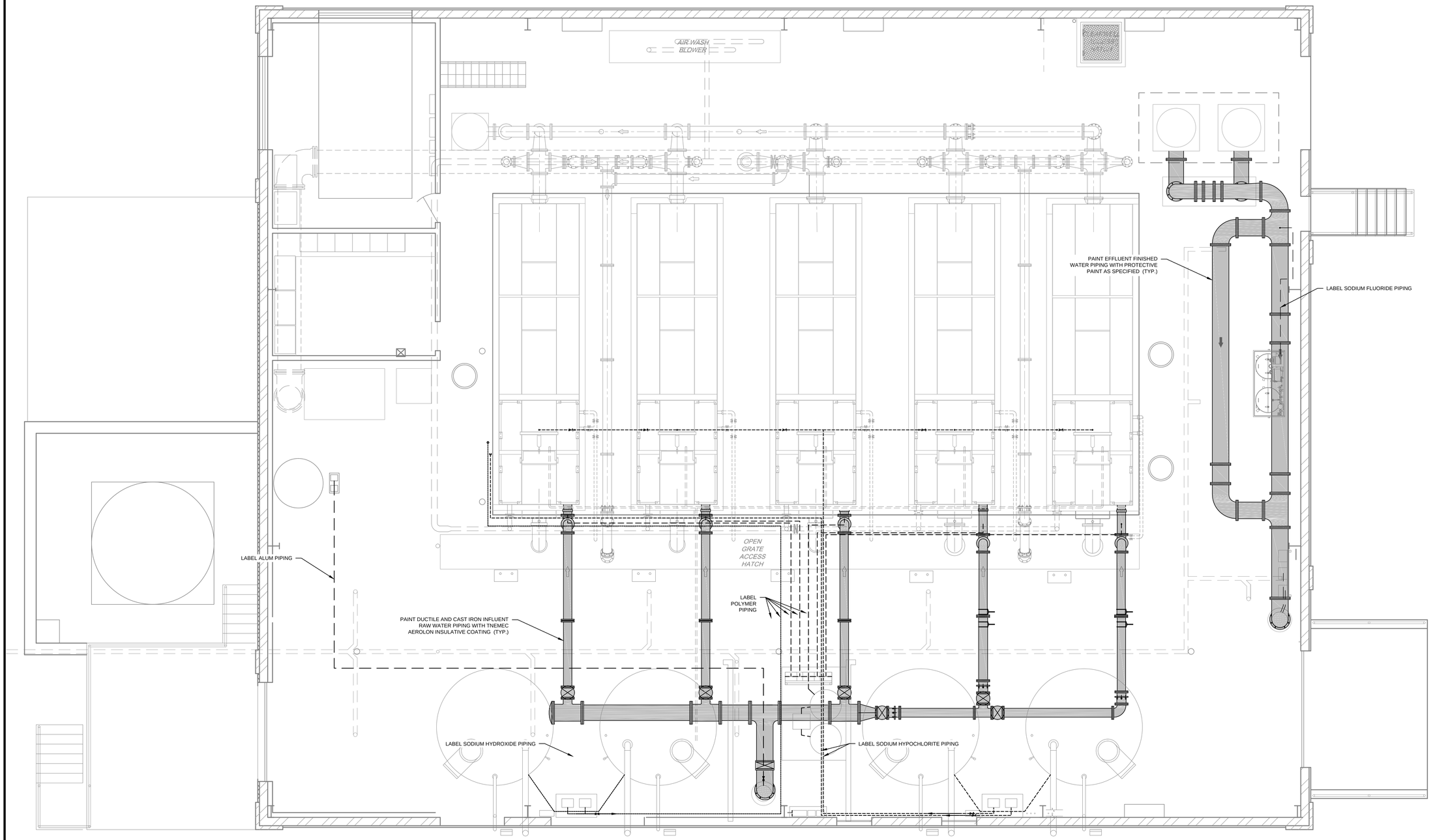

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BRIAN W. MILLER LICENSED PROFESSIONAL ENGINEER No. 18876 2017-11-14 DELAWARE

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

PIPE PAINTING AND LABELING PLAN

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	1/4" = 1'-0"
DRAWN BY	MWF/BWM
APPROVED BY	DPB

CM1703

SHEET 50 OF 54

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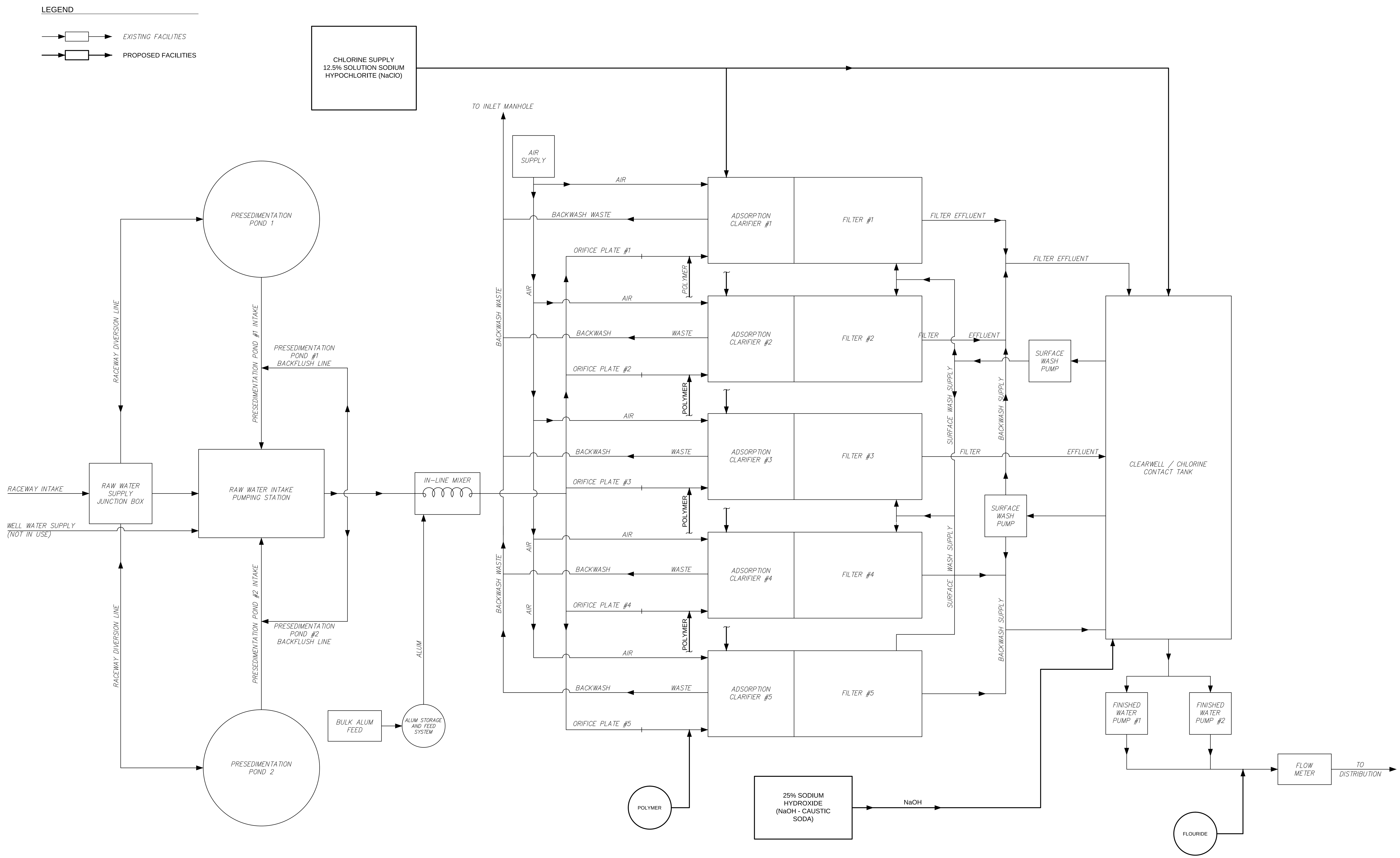

PFD TREATMENT PROCESS FLOW DIAGRAM
NOT TO SCALE

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ALL DIMENSIONS MUST BE VERIFIED BY CONTRACTOR AND OWNER MUST BE NOTIFIED OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK

BRIAN W. MILLER
LICENSED
No. 18876
2017-11-14
STATE OF DELAWARE
PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

PROCESS FLOW DIAGRAM

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

DATE	NO.	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	MWF/BWM
APPROVED BY	DPB

CM6001

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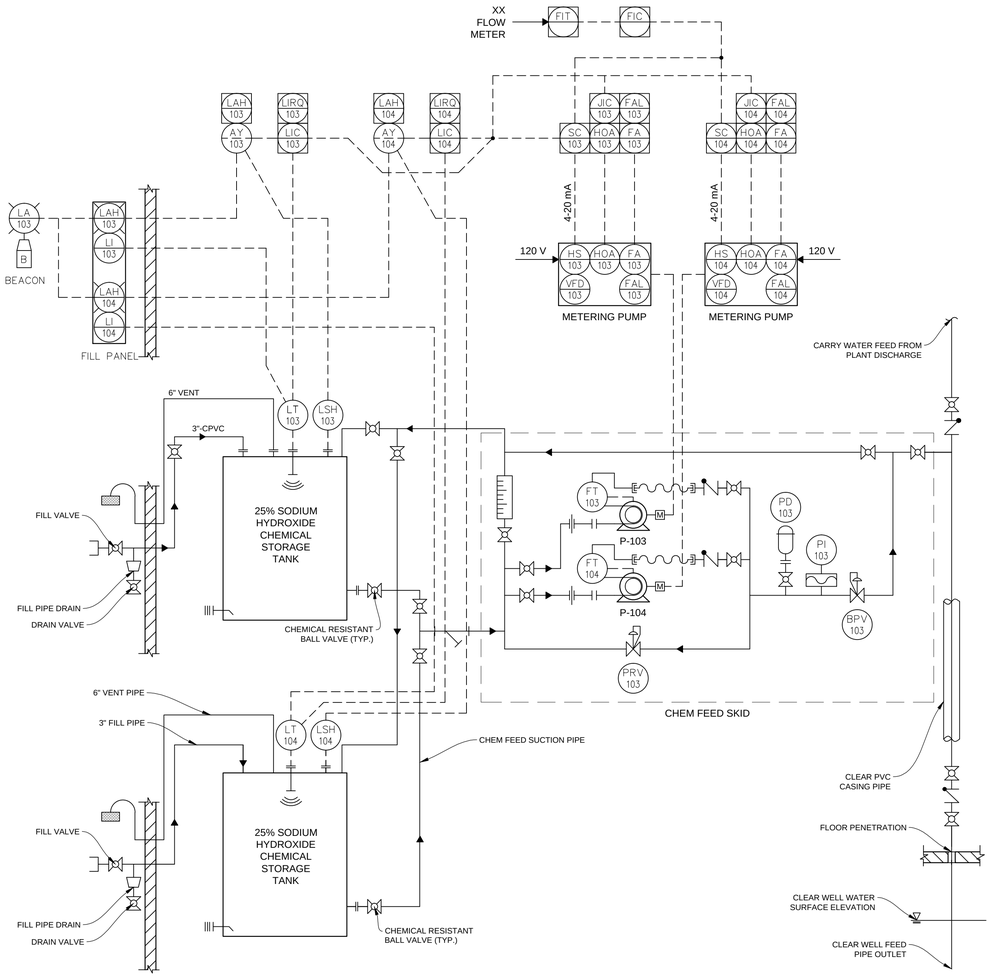
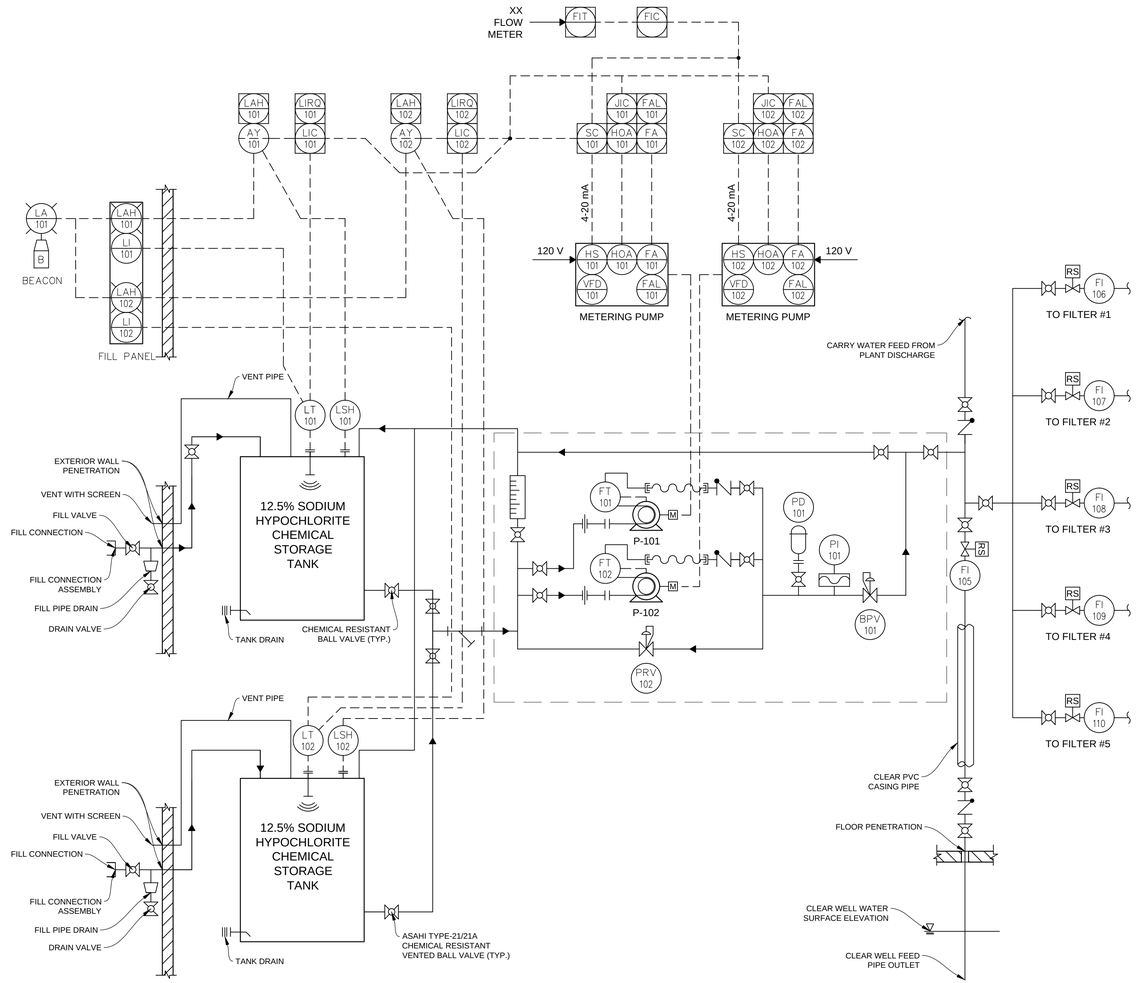


CS1 SODIUM HYDROXIDE SYSTEM
NOT TO SCALE



CS2 SODIUM HYPOCHLORITE SYSTEM
NOT TO SCALE

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BRIAN W. MILLER No. 18876 PROFESSIONAL ENGINEER 2017-11-21

CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE

CHEMICAL FEED SCHEMATICS

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	MWF/BWM
APPROVED BY	DPB

CM6002

SHEET 52 OF 54

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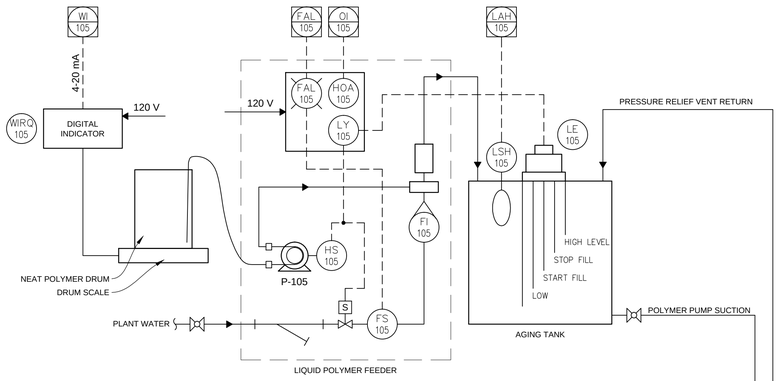
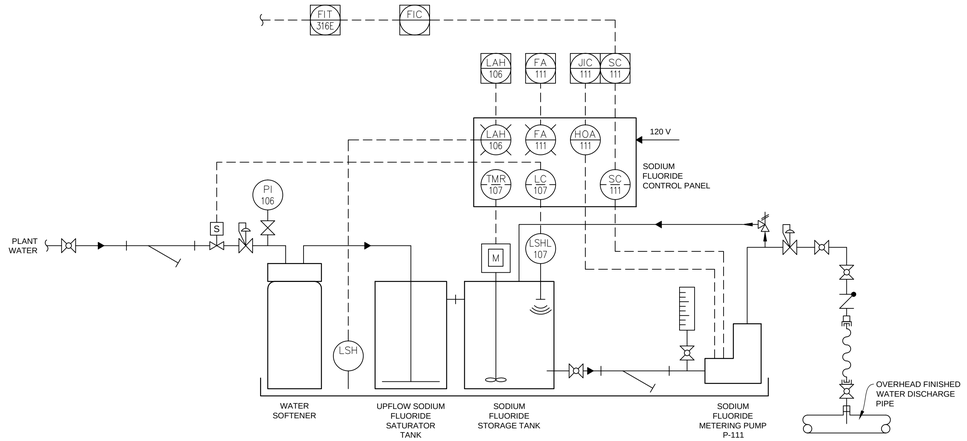
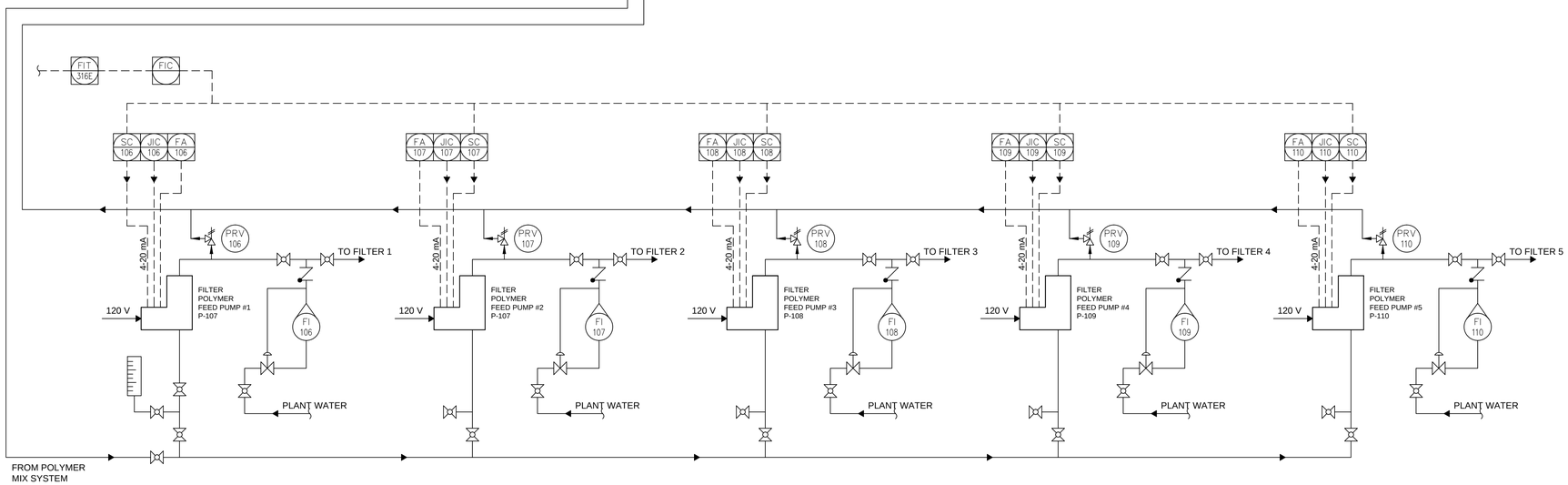


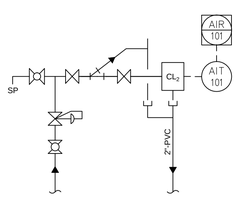
CS1 POLYMER FEED SYSTEM
NOT TO SCALE



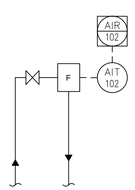
CS2 FLUORIDE FEED SYSTEM
NOT TO SCALE



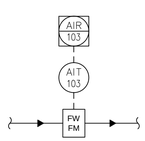
CS5 POLYMER PUMP SYSTEM
NOT TO SCALE



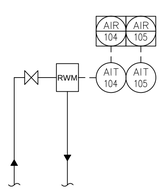
CS6 CHLORINE MONITORING SYSTEM
NOT TO SCALE



CS7 FLUORIDE MONITORING SYSTEM
NOT TO SCALE



CS8 FINISHED WATER FLOW METER
NOT TO SCALE



CS9 RAW WATER MONITORING PANEL
NOT TO SCALE

SYMBOLS LEGEND

- SHARED DISPLAY/ SHARED CONTROL
- INDICATOR LIGHT
- LOCALLY MOUNTED DISPLAY
- BACK PANEL MOUNTED
- FLANGE JOINT
- UNION JOINT
- FLEXIBLE HOSE
- BALL VALVE
- GATE VALVE
- CHECK VALVE
- __ VALVE
- PRESSURE REGULATING VALVE
- PRESSURE REDUCER VALVE
- RATE SET VALVE
- SOLENOID VALVE
- PRESSURE RELIEF SAFETY VALVE
- GAUGE ISOLATOR
- DRAIN WITH BLIND FLANGE
- FILL CONNECTION ASSEMBLY
- "Y" STRAINER
- VENT WITH SCREEN
- CALIBRATION COLUMN
- ULTRASONIC LEVEL
- MIXER
- METERING PUMP
- PERISTALTIC METERING PUMP
- PULSATION DAMPENER
- BUILDING WALL
- BUILDING FLOOR

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BRIAN W. MILLER LICENSED PROFESSIONAL ENGINEER No. 18876 2017-11-14 DELAWARE

CURTIS WATER TREATMENT PLANT IMPROVEMENTS

215 PAPER MILL ROAD
NEWARK, DELAWARE

CHEMICAL FEED SCHEMATICS

CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

NO.	DATE	REVISIONS	BY

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	MWF/BWM
APPROVED BY	DPB

CM6003

SHEET 53 OF 54

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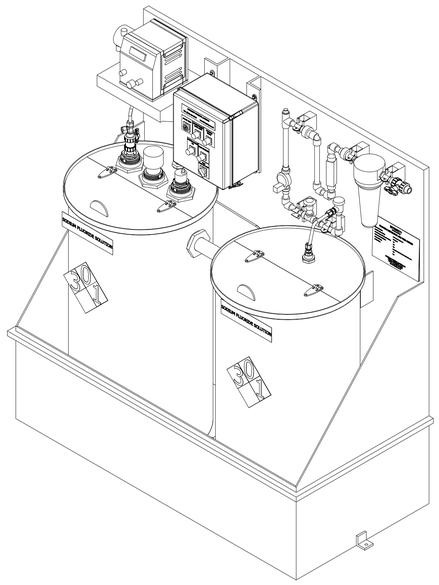
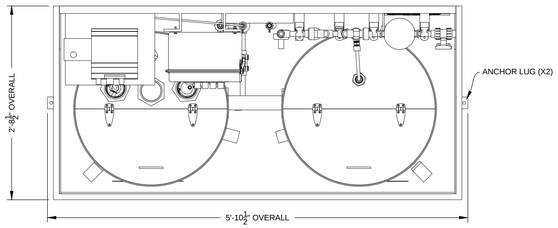
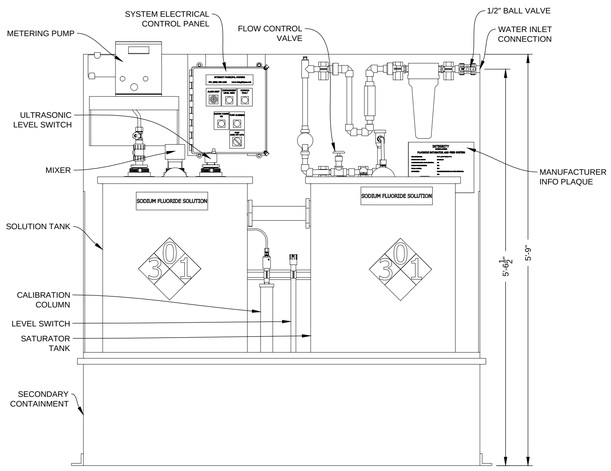


ISOMETRIC VIEW

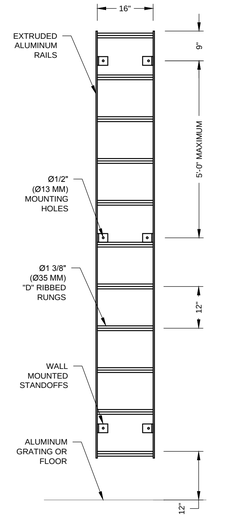


PLAN VIEW

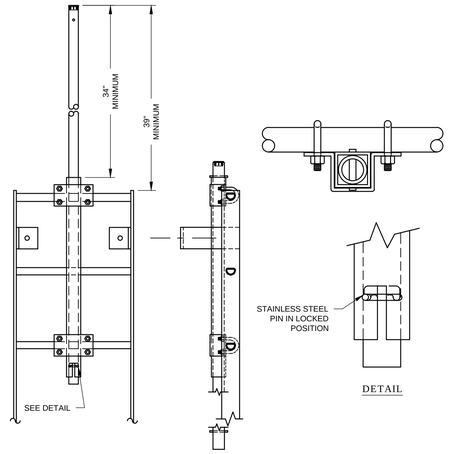


ELEVATION VIEW

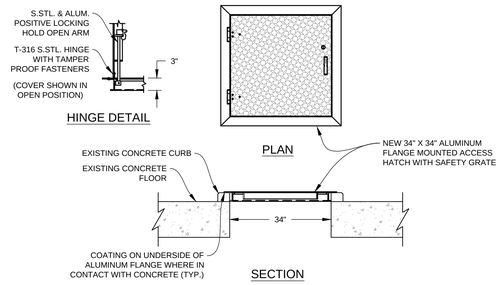
FF INTEGRITY SYSTEMS UP-FLOW FLOURIDE FEED SYSTEM
NOT TO SCALE



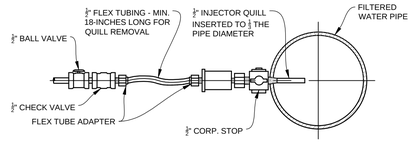
LA WALL MOUNTED LADDER
NOT TO SCALE



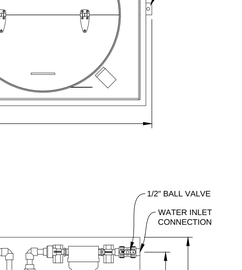
LE LADDER EXTENSION
NOT TO SCALE



CH CURB ACCESS HATCH
NOT TO SCALE



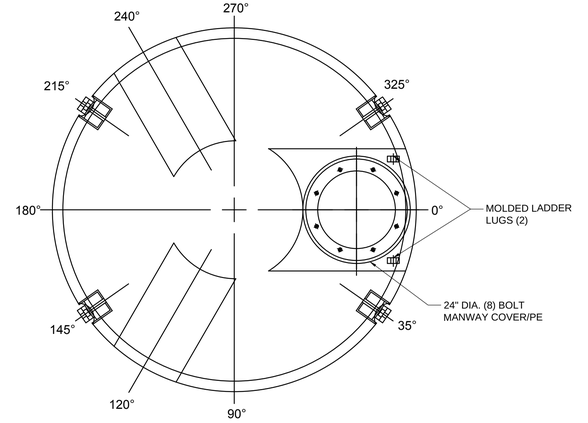
CI CHEMICAL INJECTOR
NOT TO SCALE

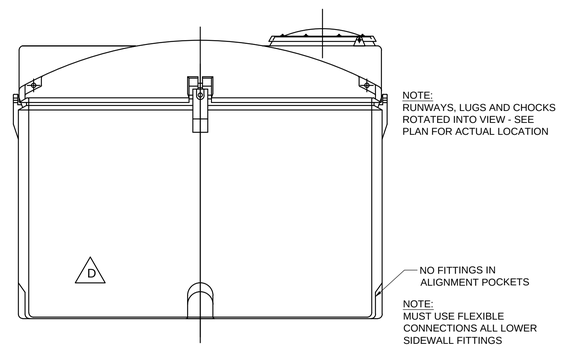


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	S052210110	HDPE SKID FRAME	1
2	BLUE-WHITE M3	BLUE-WHITE PERISTALTIC PUMP	2
3	S052210100901	SUCTION PIPING ROUTE ASSEMBLY	1
4	PA499-CPS-50	CPVC PRESSURE RELIEF VALVE, 1/2" SOCKET 3-PORT, 50 PSI SPRING	2
5	S052210100902	DISCHARGE PIPING ROUTE ASSEMBLY	1
6	CCG0500-CP	CALIBRATION COLUMN, 500 ml, PVC	1
7	GI060CV	PRESSURE GAUGE 0-60 PSI WITH 1/2" FNPT CPVC/VITON ISOLATOR	2

NOTES:
1. FRAME MATERIAL: ½" THICK THERMAL WELDED BLACK HDPE
2. PIPING MATERIAL: SCHEDULE 80 PVC, FKM/FPM (VITON) & PTFE (TEFLON) ELASTOMERS
3. CONNECTIONS: SOCKET, NPT OR TUBING TYPE
4. SOLVENT CEMENT: WELD-ON 724

CF 2 PUMP CHEMICAL FEED SYSTEM
NOT TO SCALE





NOTES:
1. DIMENSIONS WILL VARY ±3% DUE TO VARIATIONS IN MULTIPLE MOLDS & CONDITIONS PREVALENT DURING MANUFACTURE & USAGE.
2. OVERALL HEIGHT DIMENSION WILL VARY WITH THE PENETRATION OF THE INNER TANK INTO THE OUTER TANK.
3. REQUIRED ACCESSORIES ARE NOT SHOWN ON THIS DRAWING.

ST STORAGE TANK REPRESENTATION
NOT TO SCALE

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BRIAN W. MILLER LICENSE No. 18876 2017-11-2 PROFESSIONAL ENGINEER

CURTIS WATER TREATMENT PLANT IMPROVEMENTS
215 PAPER MILL ROAD
NEWARK, DELAWARE
CONSTRUCTION DETAILS
CITY OF NEWARK DEPT. OF PUBLIC WORKS AND WATER RESOURCES
220 SOUTH MAIN STREET
NEWARK, DELAWARE 19711

BY	REVISIONS	NO.	DATE

PROJECT	CNEW1612
DATE	APRIL 2017
DRAWING SCALE	AS SHOWN
DRAWN BY	MWF/BWM
APPROVED BY	DPB

CM6004

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